DOCUMENT RESUME

ED 108 758 PS 007 965

AUTHOR Mann, Marlis; And Others
TITLE Language Development: Auditory Perception. A Performance-Based Early Childhood-Special Education Teacher Preparation Program. Monograph 6.
INSTITUTION Virginia Univ., Charlottesville. School of Education.
SPONS AGENCY Bureau of Education for the Handicapped (DHEW/OE), Washington, D.C.
PUB DATE 74
GRANT OEG-0-7104153(603)-71-74
NOTE 91p.; For other documents on this program, see PS 007 960-974

EDRS PRICE MF-$0.76 HC-$4.43 PLUS POSTAGE
DESCRIPTORS Auditory Evaluation; *Auditory Perception; Auditory Tests; Behavioral Objectives; *Early Childhood Education; Educational Environment; *Language Development; Measurement Techniques; *Perceptual Development; Perceptually Handicapped; *Performance Based Teacher Education; Reading Readiness; Special Education; Teacher Education Curriculum; Teaching Methods

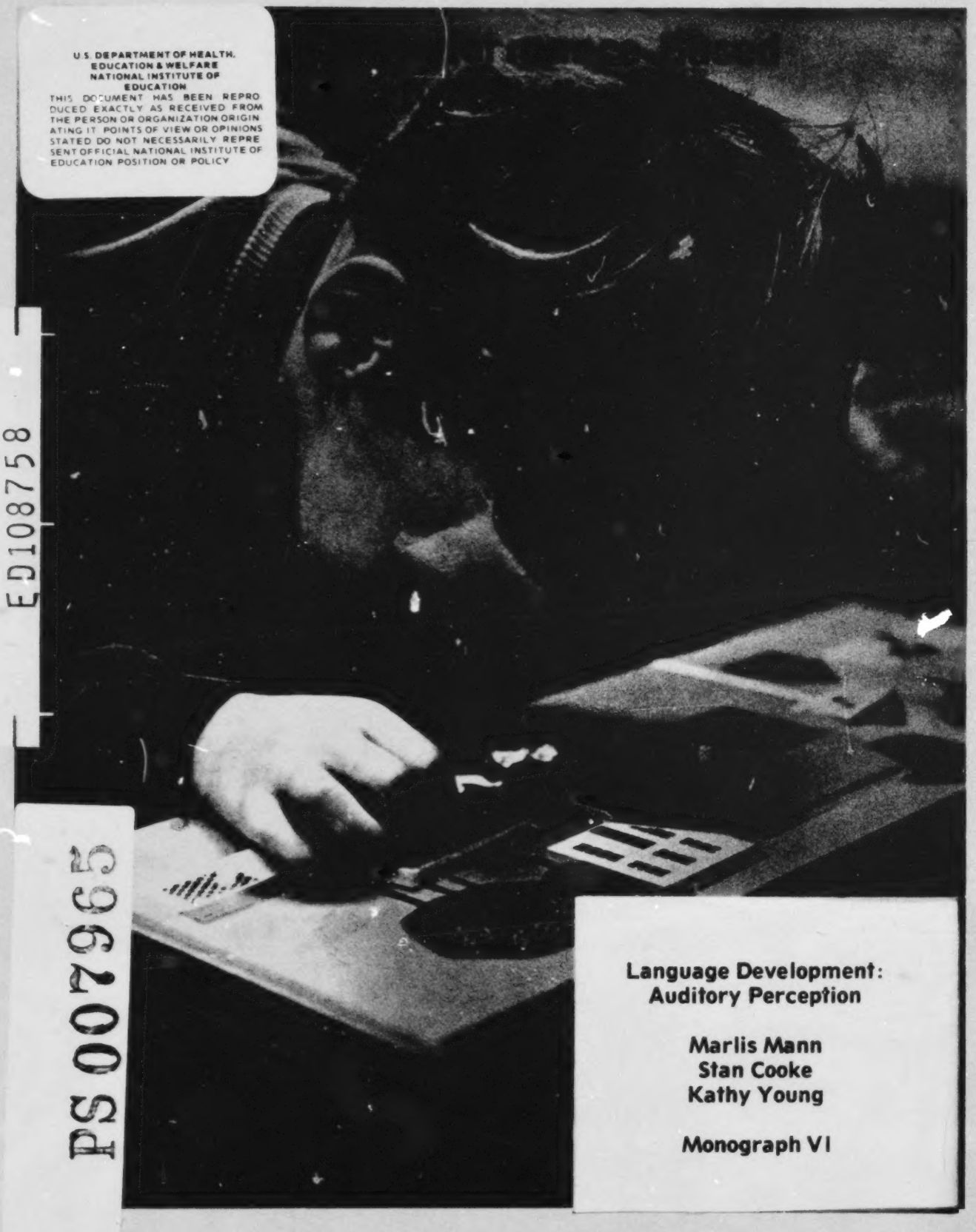
ABSTRACT

This monograph presents the module on auditory perception and its relationship to language development used in the Early Childhood-Special Education Teacher Preparation Program at the University of Virginia. The ontogeny for auditory perceptual skills, from the first through the 60th month, and auditory perceptual skill outcomes for the young child are listed. The importance of auditory perception for the child's general development and for reading readiness is discussed briefly. The bulk of this module consists of a presentation of the ontogeny, measurement techniques, and conditions for learning for the following learner characteristics: awareness of sound, focus of sound, figure ground discrimination, auditory discrimination, auditory memory, sequencing and synthesizing sound, and classification, integration and monitoring of sound. A discussion of how to identify and deal with auditory disorders is also included. Competencies which teachers need to facilitate the development of auditory perception and the module schedule and requirements are discussed. (ED)

****
* Documents acquired by ERIC include many informal unpublished *
* materials not available from other sources. ERIC makes every effort *
* to obtain the best copy available. nevertheless, items of marginal *
* reproducibility are often encountered and this affects the quality *
* of the microfiche and hardcopy reproductions ERIC makes available *
* via the ERIC Document Reproduction Service (EDRS). EDRS is not *
* responsible for the quality of the original document. Reproductions *
* supplied by EDRS are the best that can be made from the original. *
****

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
NATIONAL INSTITUTE OF EDUCATION
THIS DOCUMENT HAS BEEN REPRODUCED EXACTLY AS RECEIVED FROM THE PERSON OR ORGANIZATION ORIGINATING IT. POINTS OF VIEW OR OPINIONS STATED DO NOT NECESSARILY REPRESENT OFFICIAL NATIONAL INSTITUTE OF EDUCATION POSITION OR POLICY

ED108758



Language Development: Auditory Perception

Marlis Mann
Stan Cooke
Kathy Young

Monograph VI

PS 007965

00602

The development of the program reported herein was supported by the Bureau of Education for the Handicapped of the U.S. Office of Education (OEG-0-7104153 (603)) 1971-1974.

The opinions expressed herein do not necessarily reflect the position or policy of the Bureau of Education for the Handicapped and no official endorsement by BEH should be inferred.

Printed by
Jefferson Printing
215 Albemarle St.
Charlottesville, Virginia
for
A Performance-Based Early Childhood-Special Education
Teacher Preparation Program
at the
School of Education
University of Virginia
Charlottesville, Virginia

All Photographs except Back Cover:
Lovelace Cook

BACK COVER: Ruffner Hall, School of Education, University of Virginia.
(Courtesy of University of Virginia Department of Graphics.

99003

TABLE OF CONTENTS

Preface.....1

Introduction.....3

Ontogeny for Auditory Perceptual Skills.....5

Auditory Perceptual Skill Outcomes.....9

Relevancy of Auditory Perception.....11

Relevancy of Auditory Perception to Reading.....13

Learner Characteristics.....17

Awareness of Sound.....21

Ontogeny

Measurement

Conditions for Learning.....25

Focus of Sound.....29

Ontogeny

Measurement

Conditions for Learning.....31

Figure Ground Discrimination.....33

Ontogeny

Measurement

Conditions for Learning.....34

Auditory Discrimination.....35

Ontogeny

Measurement.....36

Conditions for Learning.....39

Auditory Memory.....52

Ontogeny

Measurement

Conditions for Learning.....55

Sequencing and Synthesizing Sound.....57

Ontogeny

Measurement

Conditions for Learning.....63

Classification, Integration and Monitoring of Sound.....70

Ontogeny

Measurement

Conditions for Learning.....74

Competencies Teacher Need to Facilitate Development of Auditory Perception.....81

Cognitive Competencies

Skill Competencies

Module Schedule and Requirements.....83

Required Readings for Auditory Perception.....85

References.....87

PREFACE

Graduate students providing lesson plan ideas for this module include Gail Prillman, Lori Bevan, Mary Whitesell, Helen Musey, Jane Griffith, Susan O'Donnell, Mary Tankersley, Virginia Raudell, and Lynne Mann.

00006

INTRODUCTION

The auditory receptive channel is undoubtedly one of the most important avenues through which children recieve information about their physical and social environment. From the very beginning, children live immersed in a world of sound--a world of auditory stimulation that constitutes a basic foundation for learning, growing and living. If children are to grow and develop appropriately--that is, if they are to become happy and productive learners, capable of experiencing a full measure of the joys of thier universe and able to cope effectively with the demands of their social environment--they must acquire adequate auditory receptive skills. Normal emotional, social, intellectual and academic development requires that children be able to detect, perceive, understand and retain a vast amount of auditory information. The ramifications of inadequate auditory receptive functioning may prove disastrous for many children. The well-being, the futures and, perhaps, the very survival of some children may be at stake. (Farrald and Schamber, 1973, p. 124)

00007

ONTOGENY FOR AUDITORY PERCEPTUAL SKILLS

1 months	a. Quieted by voice (Griffiths, 1954) b. Activity diminished when approached by sound. (Gessell, 1954) Responds to high pitch more than low pitch
2 months	Attends to human voice (oricents head to sound 11th week) Starteled response to noise Shows pleasure at musical sounds
3 months	a. Looks at speaker's face (Gessell, 1956) b. Anticipates feeding by noises and visual stimuli c. Listens to music box, watch ticking.
4 months	Turns head deiliberately to voice and will search for source of voice. (Cattell, 1950; Griggiths, 1954)
5-6 months	a. Distinguishes between friendly and angry talking. b. Demonstrates interest in human voice (Hardy, 1962) c. Reacts to musid by cooing. d. Enjoys sounds of crumbling paper and other actions of his own.
7-8 months	a. Responds when called (Griffiths, 1954) b. Raises arms when mother says "Come up" and reaches toward child. (D'Asaro & John, 1958) c. Looks at daddy when daddy is named (D'Asaro & John, 1958)
9-10 months	a. Activity stops when he hears "no-no" or his name. (Gesell. 1956) b. Responds to verbal requests like "bye-bye" c. Not distracted much by various environmental sounds outside immediate test situation.(Hardy, 1962) d. Listens with interest to words.
11-12 months	a. Likes to listen to words. b. Interest begins in emvironmental noise in test situation. (Hardy, 1962.) c. Gives toy on request when accompanied by gesture (Gesell. 1956) Adiusts to simple verbal suggestions.
13-14 months	a. Knows own name. (Griffiths, 1954) b. Likes rhymes and jingles (Griffiths, 1954) c. Distinguishes between phonemes of nature language. (Ervin & Tripp)

00008

15-16 months	a. One object in box identified when named. (Griffiths, 1954) b. Finds "baby" in picture when asked (D'Asaro & John, 1958). c. Recognizes hair, mouth, ears, and hands when they are named (Mecham, 1959).
17-18 months	a. Responds to simple command as "put ball in the chair." (Hood & Allendes, 1960) b. Two objects in box identified. (Griffiths, 1954) c. Enjoys picture book. d. Listens to rhymes and songs for 2-3 minutes.
19-20 months	a. Can identify 4 objects in box. (Griffiths, 1954) b. Points to any 3 parts of a doll. (Hood & Allendes, 1960) c. Follows one-level spoken commands. (Hood & Allendes, 1960)
21-22 months	a. Points to 4 or 5 parts of a doll. (Cattell, 1950) b. Will follow a short series of related commands.
23-24 months	a. Carries out 4 directions with ball. (Gessell & Ametruder, 1956) b. Likes to listen to reason of language, not just sound. (Griffiths, 1954) c. Listens to simple stories, showing preference for those he has heard before
25th month	a. Understands two prepositions.
27th month	a. Identifies at least six of the following pictures from names: dog, cup, shoe, house, flag, star, leaf, basket, book.
28th month	a. Understands three prepositions.
30th month	a. Identifies pictures from name: (at least seven of the following: dog, cup, shoe, house, flag, clock, star, leaf, basket, book.
36th month	a. Learns to listen and listens to learn. (Single word spoken by mother may instantaneously reorganize whole stream of activity.) b. Suggestions take effect.

-00609

c. Memory span lengthening - recalls events of yesterday.
d. Beginning to distinguish between black and white.
e. Generalization common in comprehension - in, on, under.
f. Distinguishes one and many.
g. Listens and can be reasoned with verbally.
h. Listens to longer and more varied stories.
i. Answers simple questions.

48th month

a. Tends to re-enact in body postures and gestures what is told in a story.
b. Comprehends: what do you do when hungry, thirsty, or tired.

60th month

a. Can single out one word and ask its meaning where as formerly reacted to sentence as a whole.
b. Genuine interchange of ideas remains limited.
c. Tries to use new words, can define some simple words.
d. Considerable time looking at books - likes to be read to. Understands some abstract words. (connectives, colors)

The above ontogeny is an excerpt from The Volta Review, Volume 67, No. 6, June 1964, pp. 417-419.

00010

AUDITORY PERCEPTU. .L OUTCOMES

1. Awareness of sound. To be able to determine was there a sound.
2. Focus of sound.
   (a) To be able to determine where was the sound.
   (b) To be able to attend to sound.
3. Figure-ground discrimination. To be able to determine if there was more than one sound.
4. Auditory discrimination.
   (a) To be able to determine if the sounds were the same or not the same.
   (b) To identify rhyming words.
   (c) To distinguish the sounds of the various phonomes.
   (d) To identify the sounds of the various phonomes.
   (e) To discriminate degree of sound. To be able to identify loud and soft sounds.
5. Auditory memory. Short and long term recall which involves several auditory skills. To identify the sounds of the various phonomes.
6. Sequencing and synthesizing sound.
   (a) To be able to determine what was the sequence of sounds.
   (b) To be able to determine what was the length of time between sounds (first, next, last).
7. Classification, integration and monitoring of sound. What do the sounds and words mean?
   (a) To distinguish and identify common sounds in the environment.
   (b) To associate meanings with spoken words.
   (c) To obtain meaning from sentence structure.
   (d) To follow simple explanations; carry out one-step directions given orally, then two-step directions, etc.
   (e) To gain an understanding of what to look and listen for in experiences; "tune in" when directed to.

00011

RELEVANCY OF AUDITORY PERCEPTION

> ...we live immersed in a world of sound. It is probable that human beings spend more time in listening than in any other activity and, yet, we do not know how an individual learns to listen, how this function develops, or the ways in which it is influenced by psychological variables (Sabatin, 1969, p. 730).

Receptive language skills begin to develop before birth with the development of the basic physiological equipment of audition and perception. The sequential refinement of auditory perception skills begins at birth with the simple awareness of sound, the realization that sound is different than silence. By one month an infant attentds to and can be quieted by a voice, rudimental integration of a sound with a meaning. Next comes the ability to focus on a sound, to determine its point of origin, a 4 month old child will search for a sound. By 5 or 6 months the child can distinguish between stern or friendly voices and react accordingly another step in sound-meaning integration. At 7 or 8 months a baby will attend when called, evidence that he/she can discriminate the sound of his/her name or the pitch of voice that means to pay attention. By 9 or 10 months, the child will cease activity at a "no-no" and begins to comply with simple verbal requests. A child must have developed basic figure-ground discrimination to perform these last several skills. When called, the child must be able to tell that a new sound has been added to the background hubbub and determine that it is dominant. From this skill develops auditory discrimination, the ability to discern differences in two sounds heard simultaneously. The next refinement is discrimination of degree, volume, and pitch. Then comes the ability to sequence and synthesize, to be aware of the component parts of a complex sound. By 15-16 months a toddler can identify body parts when named, new proof of developing ability to integrate and classify sounds and to associate meaning with them, or with words. At 17 - 18 months a child can obey simple commands and at 21-22 months follow several related commands.

Most auditory perceptual skills are not developed to their potential even in adults and certainly not in a two year old. By two the average child has a basis for growth even at this age which will enable the improvement of perception of sound to a level of competency which will allow him/her to communicate freely, thereby meeting needs and society's expectations.

The pre-operational child (2-7 years of age) forms mental models on the basis of sense perceptions. Since basic human communication is by speech, the child's most important modality for building mental constructs of what people are and what they do is audition. The child's hearing is a major tool for learning about people, which is the most important thing for anyone to learn about. A child at this age needs endless experiences where he/she can explore things sensorily

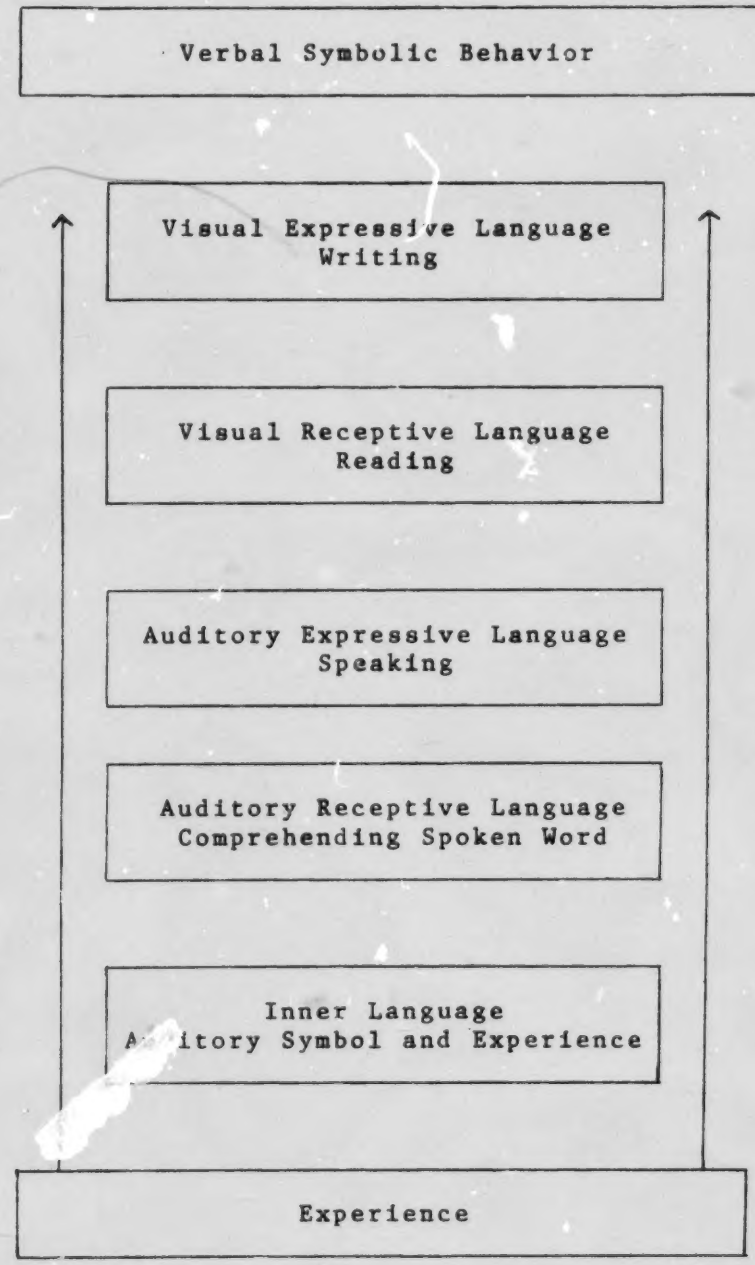
00312

to form a realistic cognitive framework on which and with which to build his future ideas and actions. In the area of auditory perception, it is necessary that a child be acquainted with all qualities and types of sound providing a basis with which to judge the purpose and meaning of sound. Through sound intake cognitive structures are erected. The quality and quantity of intake (stimulation) determines the output of mental understanding of the world, and therefore one's success at functioning in it.

Rampp (1972) describes perception as the process that associated sensation with meaning. It is the vehicle that receives, categorizes and synthesizes information brought into the mind by the senses. Auditory perception specifically is the process of the central nervous system whereby the temporal sequence of sound stimuli are encoded. It is the child's first means of learning language and until he learns to read, his only means of intake. Auditory processing skills are important throughout life, but to the child learning language, success with auditory processing makes or breaks his future performance in every facit of activity. This is the key to unlock language which is the medium of academic, social, and personal fulfillment.

Relevancy of Auditory Perception to Reading

The ability to read is a skill which develops as the climax of ones total symbolic behavior. For this skill to develop a child must proceed through many developmental stages of language as illustrated below (Myers and Hammill, 1969, p. 169).



00014

Probably the most important modality in language development is that of audition. Without adequate auditory function language development is usually delayed (Myklebust, 1967).

Auditory perception has been an area of concern for educators who are attempting to diagnose causes of reading failure. In spite of this concern Lerner (1971) feels that dysfunction of the auditory modality as a pathway for learning has been neglected by most researchers. Studies do exist that tend to support the idea that impaired readers lack certain skills of auditory perception. Johnson and Myklebust (1968) refer to Monroe, Wepman, and Scheull as individuals who have been concerned with the significance of auditory function in relation to development of both spoken language and reading.

Hearing then is important as a factor in reading readiness because the child first learns to attach meaning to printed symbols through the medium of spoken language. Stauffer (1969) describes this process as having four steps:

1. The child must be able to differentiate sounds of the language.
2. He must be able to link these sounds as a symbol with an experience.
3. The child must note that the symbol and experience being isolated represent a new concept.
4. The child must remember the spoken word, the experiences, and the contexts in which it and its associations fit and then reproduce the word in speech at the right time.

Listening involves being more than being present and immobile while the teacher is speaking. The child needs not only a high degree of auditory acuity, but also the ability to perceive and reproduce sounds correctly. If these skills are defficient, then the student will have difficulty distinguishing printed symbols and learning letter sounds.

Karlin (1971) mentions many studies which indicate that auditory discrimination is related to word recognition. If a child does not know his letter sounds, it is difficult for him to work with unknown words. Even if the child does know the letter sounds, it is still difficult for him to recognize words because letter sounds change in different words.

Rudnick and Sterritt (1967) proved that auditory functions do in fact become increasingly important to reading in the third and fourth grades, while Siegenthaler and Barr, (1967) studied auditory figure-ground perception in normal children. They concluded that among children in the age-range 4-11 years there is no significant variations as a function of age in the signal-to-noise ratio for girls between the ages of 4 and 9 years. But although 4 and 5 year-old girls and boys perform about equally with respect to S/N ratio, as age increases the sexes separate, with boys tending to perform better than girls.

00015

The greatest problem with auditory discrimination and reading readiness occurs when there is a hearing deficiency or loss. Moderate hearing loss does not seem to greatly interfere with readiness if the child works hard to overcome the deficiency. The teacher may help a child with auditory impairment by coupling visual instruction with auditory.

Betts (1946) feels that an undetected hearing problem could result in handicapping school achievement and personality development. He feels that the school should be responsible for the early detection of hearing impairment and should provide adjustment if necessary in the form of differentiated instruction, special classes, or even a special school for the deaf.

When the topic of auditory perception is discussed it can be broken down into the three general areas of (a) auditory acuity, (b) auditory discrimination and (c) auditory memory. The role that each of these play in auditory analysis and synthesis, and total language development is important.

The auditory process has been sub-divided by Falck (1973, pp. 413-416) into the following categories:

I. Signal Reception
   - A. Auditory Sensitivity
   - B. Auditory Localization

II. Signal Analysis and Acceptance
   - A. Auditory Scanning-Attention
   - B. Figure-Ground Choice
   - C. Discrimination
   - D. Auditory Closure
   - E. Auditory Monitoring (Feedback)

III. Signal Retention
   - A. Immediate and Delayed Auditory Recall
   - B. Memory for Meaningful Material (Memory for Ideas)
   - C. Auditory Sequencing in Temporal Order

IV. Signal Synthesis and Integration
   - A. Auditory Association Semantic Concept (Language)
   - B. Auditory Comprehension

V. Signal Convergence and Divergence
   - A. Creative, Innovative, Evaluative Cognitions via Auditory Channel

For this program the following areas of auditory perception have been selected as developmental outcomes for young children:

Awareness of Sound
Focus of Sound
Figure-Ground Discrimination
Auditory Discrimination
Auditory Memory
Sequencing and Synthesizing of Sound
Classification, Integration and Monitoring of Sound

00016

General Conditions to Develop Auditory Perception

Teachers have probably never stopped to realize how frequently they use auditory training skills in learning experiences. Hearing, language, and speech cannot be separated. Auditory training is constantly going on. As the child develops, auditory memories are built up, and it is a major early childhood goal to develop good auditory skills - they can be learned.

The young child's sense of hearing, just like that of sight, is better developed than many people have realized. So far as the newborn is concerned, whether or not he is sensitive to sound has not been firmly established. At the age of 4 to 10 days, however, the infant responds to a clap of the hands. By the 11th or 12th day, he is soothed by a soft voice or whisper. Beyond that time most infants respond to continuing single sounds, like the tick-tock of a clock, the tinkle of a music box, the click of a typewriter, or even a heart beat.

Babies need security; sameness of sounds, and repetition of sound tends to have a soothing effect, and to afford a feeling of secureness. Music, for instance, quiets babies; their breathing becomes slower, their pulse rate decreases.

Experiment with all types of auditory stimuli to discover what appeals most to each baby. It may be that a metronome, with its regular beats, is a quieting influence. Music boxes and recorded instrumental and orchestral compositions are always very desirable. Be sure to select only high quality in these; remember that taste and appreciation begin to develop very early in a child's life.

Auditory development begins with the recognition of the gross sounds. These gross sounds may be defined as all of the common sounds of the home, neighborhood, nature, and those produced by animals. They are characteristic noises of the environment. The vocabulary related to this category of sounds is very extensive and should be emphasized when this aspect of training is undertaken.

Training in auditory perception involves helping the child to pay attention to auditory stimuli; to discriminate sounds, and to interpret what he hears. The child learns to discriminate between rhythms and between sounds of different pitch and loudness, and also to distinguish the sounds to which he should attend from background noises (training in auditory figure-ground perception). The preliminary training is concerned with sounds other than speech sounds. Children may respond either with movements or with words. For example, the teacher may clap with a certain rhythm (e.g., a half beat followed by two quarter beats), and requires the children to follow suit; or the children may be asked to touch the pictures of animals whose sounds they hear on a recording; or they may be required to listen to unseen musical instruments and then touch those that were used. In each area of auditory perception specific learning conditions are given.

00017

Generally, perceptual disorders are categorized according to the sensory channel affected (McGrady and Olsong, 1970) which means that most studies have dealt with visual, motor and auditory dysfunctions as broad categories rather than more discrete skills as mentioned above.

Sabatine (1969) feels that the process of auditory perception is broken down into four, rather than three, stages as illustrated below:

1. The recognition of sound elements as meaningful information
2. The retention of these units of information.
3. The integration of the symbolic relationships of these units as language concepts.
4. The comprehension of language symbols through the three previous stages or steps of auditory, perceptual function (p. 730).

Regardless of how one wishes to categorize or subdivide auditory perception it is almost universally agreed upon that dysfunctions in the auditory sphere can and do result in some of the most severe and difficult to diagnose and treat forms of developmental language disorders. Wepman, Johnson and Myklebust have been the leaders in the field in respect to emphasis upon auditory handicaps and their influence upon competency in speaking, reading, spelling and writing. According to these authorities a substantial proportion of children in early elementary grades may manifest inadequate auditory skills (Vellutino, DeSetto and Steger, 1972).

Over the past decade individuals have become concerned over auditory discrimination skills over those of memory and acuity and have utilized primarily one test of auditory discrimination. A recent study of a group of dysphasic children has shown that they do not differ from normal on performance on visual-motor tasks, but do on auditory-vocal tasks with the exception of one task, where there was no significant difference, and that was on auditory discrimination (Weiner, 1972).

Learner Characteristics: Auditory Perception

Terminology	Characteristics	Areas of Development	Conditions for Atypical Characteristics
Aphasia	Does not acquire speech. Vocalizations lack directed intent and purpose. Does not use gesture. Does not respond to sound consistently. Is not unduly sensitive to movement or other visual clues.	Sequencing and synthesizing sound.	
Hard of Hearing	Child ignores, confuses, or does not comply with oral directions. Slight speech defect. Confused expressive language. Inattentive to sound. Delayed language development Unintelligible speech.	Auditory discrimination Auditory discrimination Sequencing. Awareness of sound. Awareness of sound.	
Auditory aphasia	Child cannot select from auditory world stimulus which is important (Rampp, 1973) Grasps only very simple directions Difficulty in sound blending activities. Difficulty in attaching verbal symbol to an experience. Poor impulse control and frequent display of emotionality. Limited play due to inability to pretend. Mild articulatory deviations. Does not use meaningful spoken language.	Auditory figure ground. Auditory memory. Auditory discrimination. Classification integration in monitering of sound. Figure ground discrimination. Sequencing and synthesizing sound. Figure ground descrimination. Sequencing and synthesizing sound.	Pictures to accompany auditory stimulus.

Learner Characteristics: Auditory Perception

Terminology	Characteristics	Areas of Development	Conditions for Atypical Characteristics
Auditory aphasia (cont.)	Poor reading ability (Deutsch, 1963). Remembering names of months, days address the alphabet. Distractibility - may not attend to task often.	Auditory discrimination. Auditory memory. Auditory discrimination.	
Peripheral deafness	Does not acquire speech (Myklebust). Characteristic tonal quality of vocalization. Uses vocalizations meaningfully and projectingly does not improvise sound for pleasure (no vocalization during play). Use of gestures. Laughing, smiling and crying are characteristics. High sensitivity to movement and other visual clues. Attention to facial expression. Highly sensitive to tactile sensation. May display characteristic shuffling of feet when walking. Normal social adjustment.	Awareness of sound.	
Agnasia (Disturbance in the analytic-synthetic activity of the cortex)	Unable to make sound discriminations May look around room randomly in response to a source of sound. Has difficulty linking sounds with their sources.	Auditory discrimination. Focus of sound Focus of sound.	

02008

Learner Characteristics: Auditory Perception

Terminology	Characteristics	Areas of Development	Conditions for Atypical Characteristics
Agnasia (cont.)	May have difficulty learning that different people have different voices that are specific to the person.	Focus of sound.	
	May have tendency to turn one ear to search for source of sound.	Focus of sound	
	May have articulation problem or may misuse "small words."	Auditory discrimination.	
	Can't repeat foreign or nonsense words correctly.	Auditory discrimination.	
	Has specific difficulty with sounds of f, v, s, z, sh, zh, th, t, d, p, g, k and b.	Auditory discrimination.	
	Child speaks in monotone or unnatural pitch.	Auditory discrimination.	
	May tend to react to the first recognizable element in auditory environment. Fails to perceive whole.	Figure ground.	

13000

Auditory Acuity

Auditory acuity is awareness of sound or stimulus detection. Auditory acuity is the ability to hear to a degree that information relayed by the auditory channel is received by the audition sense modality. In essence this is the ability to have functionally normal hearing to receive any form of auditory communication. It is not a process that involves attaching any meaning to what one hears. Most authorities agree that reduced auditory acuity can affect an individual's language development.

Hardy and Bordley (1960), in a study to outline and define the pertinent structures and functions involved in the activity called hearing, found that to effectively evaluate hearing in children, the child's developmental landmarks are extremely important, often more than measurements. The first developmental level of hearing is obviously the ability to detect sound.

Miller et al. (1963) observed response of three, four, and five month old children to auditory stimuli. They found that younger children respond to unexpected or loud sounds by an automatic reaction such as spreading of toes, wriggling nose, eye movements. Older children responded by localizing the source of sound.

Measurement.

The best assessment of whether a child is hearing or not is done by an audiologist. For children who are too young for standardized tests, teacher made tests such as clapping hands behind the child to see if he/she reacts to the sound. Rosenberg (1964) estimates that there are approximately ten million people in the U.S. who suffer from a handicapping hearing impairment so it is most important to assess the young child's hearing ability.

Two informal auditory acuity screening techniques include the Loud-tick watch test, and Whisper test(Farreld & Schanker, 1973). The procedures are as follows:

The Loud-tick Watch Test: Have the child stand with one ear toward the examiner and have him place his finger in the other ear. Screen the child's head with a card so that the child cannot see the watch. Hold the watch close to the child's ear and gradually move it away until it can no longer be heard. Record the distance away from the child's ear when he can no longer hear. Then hold the watch forty-eight inches from the child's ear and gradually move closer until the child hears the watch ticking. Record distance at which sound is first heard Average the two distances. The average child should be able to hear the watch tick at a distance of approximately forty-eight inches. If the average of the two measures is less than 20 inches the child should be referred for in depth testing. A loud ticking watch such as the Ingersol or the Westclock Pocket Ben should be used. Be sure the testing is done in a quiet room.

The Whisper Test: Line up several children (usually four or five) approximately five feet from the examiner and facing away from the examiner. Testing should be done in a quiet room and in a room with a minimum of distractions. The examiner remains in the same spot behind the children and gives directions in a low, distinct tone of voice. The directions should be very simple. Watch the children and note those who hesitate, who watch others to see what they do, who look back at the examiner or who fail to hear the whisper. If a child functions well at twenty feet, his hearing is likely to be within normal limits. (p. 129)

Following is a table from Dunn (1973) describing the degrees of impairment in auditory acuity.

00623

Degrees of Impairment in Auditory Acuity

Average of the Speech Frequencies in Better Ear	Effect of Hearing Loss on the Understanding of Language and Speech
Slight (26-40 dB)	May have difficulty hearing faint or distant speech.
	May experience some difficulty with the language arts subject.
Mild (41-55 dB)	Understands conversational speech at a distance of 3 to 5 feet (face to face.)
	May miss as much as 50% of class discussions if voices are faint cr not in line of vision.
	May exhibit limited vocabulary and speech anomalies.
Marked (56-70 dB)	Conversation must be loud to be understood.
	Will have increased difficulty in group discussions.
	Is likely to have defective speech.
	Is likely to be deficient in language usage and comprehension.
	Will have limited vocabulary.
Severe (71-90 dB)	May hear loud noises about 1 foot from the ear.
	May be able to identify environmental sounds.
	May be able to discriminate vowels but not consonants.
	Speech and language defective and likely to deteriorate.
Extreme (91 dB or more)	May hear some loud sounds but is aware of vibrations more than tonal patterns.
	Relies on vision rather than hearing as primary avenue for communication.
	Speech and language defective and likely to deteriorate.

00024

Auditory Perception: Auditory Acuity

Age in months	Stage	Appropriate Equipment	Alternate
1	Quieted by voice; activity diminished when approached by sound; turns head towards source of sound.	Human voice	Talk to infant as he/she is engaged in an activity observe child's reaction to your voice.
2	Attends to human voice (Cattell)	Human voice	
3	Anticipates feeding by noises and visual stimuli		
6	Up to six months either body movements or cessation of an activity such as sucking, crying, etc.		
7	After six months child has learned to "tune out" sounds if not interested and therefore may give impression of not hearing.		

1. Learner Outcome: Awareness of sound.

   a. To be able to determine there was a sound.

2. Conditions

   a. Learner characteristics - Two children, both five years of age, both Caucasian. One girl Sheila, and a boy, Frank. Both of above average intelligence and very cooperative.

   b. Situational variables - E will be working with two children. the setting will be a room with virtually no distracting objects, other than those that are experimentally oriented. E should have complete control over the amount, rate, and type of materials and activities used. It will be necessary to cue in on the attention span of the subjects.

   c. Strategy -

      1. Make various sounds and see if child responds or reacts while blindfolded.

      2. Present sounds and have child raise his hand if he hears something. (while eyes are covered)

   d. Content - pan, drum, clock, rattle, paper, etc.

1. Learner Outcome: Awareness of sound.

   a. To be able to determine there was a sound.

2. Conditions

   a. Learner characteristics - Appropriate for preschool children or children with an auditory problem.

   b. Situational variables - Small group experience outside classroom.

   c. Strategy -

      1. Take children outside and see if they hear anything.

      2. Have children signal when they hear something.

   d. Content - outdoor noises, quiet spot.

00026

The following discussion pertains to providing environmental conditions for the child whose auditory acuity is less than normal.

School progress is determined by many factors such as intelligence, emotional adjustment, drive, motivation, and physical health. Even an intelligent, well-adjusted child with a hearing defect may experience difficulty in school because he can not hear what is going on in the classroom, and may need special help to overcome his handicap.

Charles Palmer (1951) gives helpful suggestions to teachers on how to help the child who is hard-of-hearing. These suggestions were designed not to make excessive demands on the teacher's time, rather, they will help him to understand the problem and enable him to teach the child more effectively.

1. Seat the hard-of-hearing child toward the front of the room. If hearing is better in one ear than in the other, the better one should be toward the source of sound (teacher and class).

2. Permit the child to move his seat if the "teaching center" moves to another part of the room. Permit him to turn around to hear the other pupils speak.

3. Help him with lip-reading. The hard-of-hearing child needs to see the speaker's face. We can help him by seating him where we do most of our talking. If he is seated and we stand too close, he looks up to see our chin and nose and gets only a distorted view of the lips. We will also want to keep our hands away from our faces when speaking, and if we read a book, we will want to keep the book from interfering with the child's view of our lips. We will allow the light to shine on our faces, not in the pupil's eyes. (This means that we will keep away from the window!)

4. Do not turn your back while talking. Do not talk while writing on the chalkboard. Do not walk about the room while talking about important phases of school work. Select the spot that is most advantageous to the hard-of-hearing child.

5. Avoid using loud tones or exaggerated mouth movements. Speak naturally and use very few gestures.

6. Many words sound the same (blue, blew, tax, tack). It is essential, therefore, that we use words in sentences to give the pupil a clue when dictating spelling words.

7. Do not proceed too far in a discussion without asking or making sure that the hard-of-hearing child understands.

8. Names of people and places are very difficult for the hard-of-hearing child to understand. It is well to place new words or terms on the board and discuss new material from this vocabulary.

00027

9. Ask another child to help the hard-of-hearing child get the correct assignment. The teacher should not, however, expect the helping child to devote a great deal of time to this.

10. Use clear enunciation and insist that the pupils do the same.

11. Encourage participation in extra-curricular activities, especially vocal music. The hard-of-hearing child tends to withdraw from others.

12. The hard-of-hearing child needs sympathetic understanding.

13. Encourage the hard-of-hearing child to keep trying. Be patient. Repeat instructions as often as necessary. He needs confidence.

14. If a visit is being planned, or a visitor is coming, anticipate the difficulty that the hard-of-hearing child will have and prepare him for it.

15. Nurses and teachers should be especially vigilant in noting common colds, influenza, or throat infections in the hard-of-hearing child. He should be given medical attention as quickly as possible.

In addition to these suggestions other researchers, (Budoff and Quinlan, 1964) stated that auditory learning among primary grade children seemed more rapid and efficient than learning through visual presentation with meaningful materials.

According to a recent study (Pollock and Pollock, 1971) teachers who pride themselves on respecting individual differences, too often neglect children who have exceptional hearing difficulties. This letter is to a classroom teacher, Mrs. Smith, who has a pupil in her class with a hearing difficulty and who wears a hearing aid.

Dear Mrs. Smith:

We hope this letter will answer some of the questions and will suggest solutions to problems you might encounter.

Darlene has a moderate degree of hearing loss. Without her hearing aid she can hear speech very faintly, if at all. A hearing aid can make sounds louder for her, but what she hears is still unclear. If you'll listen with her aid in your ear, you'll probably see what we mean.

Basic to your handling of any child with special problems is you awareness that you have a classroom of children to teach. While the following suggestions might appear to be biased in favor of the

hearing-impaired child, they are meant to be considered only insofar as they do not disrupt your class and interfere with you over-all responsibilities. Now to be specific:

First, don't ignore the fact that Darlene is wearing a hearing aid. Perhaps you, or Darlene, might show her hearing aid to the rest of the class like something special. It can be described as a "little radio."

Second, avoid talking with your back to the class. When you are facing her she can use her ability to lip-read in order to understand you.

Third, enunciate clearly; but do not exaggerate your lip movements when you talk to her. When you emphasize the pronunciation of words you facial movements become distorted, and the words are harder to see.

Fourth, encourage Darlene to work independently and to try things on her own.

Fifth, don't favor Darlene because of her hearing problem. Be sure that she knows the same behavior is expected of her.

Sixth, never assume that Darlene understands you because she nods "yes."

And finally, be realistic in your appraisal. To present a sugar-coated picture of Darlene's achievements is not a favor to her, her parents or those who may later work with her.

It is not possible to predict all of the questions and problems that could arise, but we hope this information will be of some use to you.

Best wishes....

It can be seen, therefore, that hearing loss may have wide-range effects on a child's personal and social development as well as on his educational growth. The child's parents, brothers, sisters, neighbors, classmates, physicians, and teachers are all involved in the solution of his problem. In order to insure that appropriate measures are taken to create a wholesome climate for children with hearing defects, a broad program of community education and planning is necessary.

00029

Focus of Sound

Focus of sound is sound localization. Its the ability to determine where was the sound and level to attend to sound.

Difficulty in attending to auditory stimuli may be related to: low level or absence of hearing acuity; distractibility - competitive visual or auditory stimuli; hyperactive behavior; severe emotional disturbance; sever mental retardation; and inability to obtain meaning from auditory stimuli.

To date there is no affective means of assessing the reasons for inattentiveness.

Little research exists on most efficient ways to teach attentiveness to sound. Literature mostly describes clinical approaches, e.g.:

> Amplification to intensify stimuli and awareness; sound producing devices which can be manipulated by the child; (toys, musical devices, appliances, etc.); turning child's head toward sound source; making sound source visible when child turns head; and behavior modification principles.

The ability to localize sounds supposedly helps the child visually link sounds with their sources and helps him establish associations between sounds and objects or events.

00430

Auditory Perception: Focus of Sound

Age in months	Stage	Appropriate Equipment	Alternative
3	Looks at speaker face.	Speaker	Speaker looking at child.
4-5	Turns head deliberately to voice and will search for source of voice or sound. (Cattell)	Speaker	
6	May be able to locate fimiliar sounds such as their mother's voice.	Mother's voice	
9	Enjoys mother's imitation of his own sounds more than he enjoys other sounds.		
9-10	Not distracted much by various environmental sounds.		
11-12	Interest begins in environmental noise in test situation; outside immediate test situation.	Vacuum cleaner, dish-washer, etc.	
12	Likes to listen to words.	Picture books.	
17-18	Listens to rhymes and songs for 2-3 minutes	Picture story books	
18	Enjoys picture book.	Cloth Books.	

1. Learner Outcome: Focus of sound.

   a. To be able to determine where was the sound.

2. Conditions

   a. Learner characteristics - Use with normal children in a preschool situation.

   b. Situational variables - An isolated room free from auditory and preferably visual cistractions.

   c. Strategy -

   Blindfold child and make noises from various positions in the room. Have child point - north, south, east or west, to locate sound.

   d. Content - noise makers, blindfold.

1. Learner Outcome: Focus of sound.

   a. To be able to determine where was the sound.

2. Conditions

   a. Learner characteristics - Use with children of preschool age who display severe attending problems.

   b. Situational variables - make sure no extraneous noises interfere with the activity.

   c. Strategy -

   Hide a clock that ticks. Play game of Hide-and Seek encouraging child to use auditory clues in seeking the hidden object.

   d. Content - clock.

00032

1. Learner Outcome: Attending to sound; focus of sound.

2. Conditions

   a. Learner characteristics - a boy, Sam, five years of age, Caucasian, very brief attention span.

   b. Situation variables - any appropriate place in the classroom.

   c. Strategy -

      Play tape from which child has to identify familiar sounds without the use of visual aids. Make sure there are sufficient environmental noises so as to provide opportunity for distraction. Observe child to see the level of attending at which he is functioning.

   d. Content - DLM Auditory Learning of Familiar Sounds.

1. Learner Outcome: Attending to sound; focus of sound.

2. Conditions

   a. Learner characteristics - class of 10 preschool children of various ages 2-1/2 to 5 years of age. Normal and handicapped children.

   b. Situational variables - time when children are in a group situation.

   c. Strategy -

      Teach children a song. See how well they listen and how much they learn from the experience.

   d. Content - Baby Bumble Bee song:

      I'm bringing home a baby bumble bee,
      Won't my mommy be so proud of me?
      Cause I'm bringing home a baby bumble bee.
      Bzz. Bzz. Bzz. Ouch! He stung me!

00033

Figure Ground Discrimination

Figure ground discrimination is the ability to determine if there was more than one sound. Auditory figure ground selection has to do with the ability to select relevant from irrelevant auditory stimuli in the environment.

Other associated behaviors to distractibility, short attention span, and ignoring some auditory stimuli in listening activities are associated behaviors which influence figure ground discrimination.

Little research on teaching children to discriminate significant from insignificant stimuli. Great need to research this ability relative to other important variables - aspects of attention, organic conditions of the brain, effect of drugs, nature and presentation of auditory stimuli.

To informally measure this ability one can present a significant stimuli and at the same time a irrelevant stimulus and ask the child if he/she heard the significant stimulus or he/she can produce it.

00634

1. Learner Outcome: Figure-ground discrimination

   a. To be able to determine if there was more than one sound.

2. Conditions -

   a. Learner characteristics - Fred is a five-year old preschooler who has trouble identifying sounds. His sounds tend to run together.

   b. Situational variables - Use in a preschool situation that is non-threatening to the child.

   c. Strategy -

      Have child pick out noises in environment. Have a few planned noises occuring simultaneously to see if the child can detect them.

   d. Content - noisemakers.

1. Learner Outcome: Figure-ground discrimination

2. Conditions

   a. Learner characteristics - Any four- or five-year old child.

   b. Situational variables - Any quiet corner of the preschool or perhaps an isolated room.

   c. Strategy -

      Play sound effects record and see if child hears more than one thing going on at a time.

   d. Content - sound effects record.

00035

Auditory Discrimination

Auditory discrimination is the process of an individual being able to make judgements as to the sameness or difference in sounds, be they minute or gross. Such as the ability to distinguish between environmental sounds as the telephone and door bell or between "t" and "d". An individual may have normal auditory acuity, but poor auditory discrimination (Buktenica, 1971). Just as auditory acuity is essential for language development so is auditory discrimination as illustrated by Wepman (1959):

> (a) the modalities of learning can and should be studied differentially, (b) children develop the ability to discriminate aurally at different rates, (c) delay in the development of auditory discrimination has little, if any, relationship to intelligence, and (d) delays in the development of auditory discrimination relates positively and problably causally, to poor speech articulation, poor reading ability, or both (p. 96).

Ervin and Miller (19__) report that little is known about the order of learning to hear differences in various aspects of intonation, stress, and quality in voices. The only study on this subject is reported by Shvarchkin (19), in which he taught children between 11 and 22 months Russian words differing only in one phoneme at a time. He presented his results as a series of phonemic features that distinguish groups or classes of phonemes. The phonemic features were learned in the following order: Vowel distinctions are learned first. The order of acquisition for the remaining features is: (a) vowels vs. consonants; (b) sonorants vs. articulated obstruants; (c) plain vs. palatized consonants; (d) nasals vs. liquids; (e) sonorants vs. unarticulated obstruants; (f) labials vs. linguals (i.e., nonlabials); (g) stops vs. fricatives; (h) front vs. back linguals; (i) voiceless vs. voiced consonants; (j) blade vs. groove silibants; (k) liguids vs. /y/. By the end of the second year the children could distinguish all the phonemes of Russian. While techniques which could be expected to yield comparable results to those of this important study have been applied in this country, the results have not been presented according to sounds or features (Schiefelbissch and Lindsey, 1958; Templin, 1957).

It is assumed information on the actual phonetic cues used by the child could be obtained by using artificially constructed vocalic stimuli. Such studies have been conducted by psychoacousticians on adults, but not on children.

Auditory discrimination, then, is the ability to differentiate auditory signals from auditory noise when differences between signal and noise are minimal. More specifically the child is expected to develop the following auditory discrimination skills:

To be able to determine if the sounds were the <u>same</u> or <u>not the same</u>.
To identify rhyming words.
To distinguish the sounds of the various phonemes.
To identify the sounds of the various phonemes.

To be able to identify the degree of sound as in loud and soft sounds or big and little sounds.

In designing environmental conditions to develop discrimination of stimulus (sound) one must recognize common properties of sound, those of duration, intensity, frequency, timbre, and prosodic change. Auditory discrimination involves discriminating sounds varying on one acoustic dimension - (same/different). Verbal or non-verbal responses can be used for informal assessment. Non-verbal like performing an agreed upon actions pointing to a pair of like or unlike objectives.

The dimensions of frequency, intensity, like or unlike speech sounds, and like or unlike noises can be used. Sounds may be human (vocal sounds, words) or non-human (bells, watches, machines, etc.).

The ontogeny of auditory discrimination follows as well as measures of and environmental conditions to develop auditory discrimination.

Measurement

The two most common auditory discrimination tests used with young children are the Wepman and Goldman-Fristoe. The Wepman particularly has been considered questionable in terms of validity. Both of these instruments require a common vocabulary and don't account for cultural synonyms; therefore, culturally different and very young children do not score well on these tests. However, if a teacher uses them as tools to learn more about the child's auditory acuity, the child is not penalized due to different vocabularies.

Goldman-Fristoe Woodcock Discrimination Test - This test measures recognition of fine differences between phonemes. It utilizes paired words which must be identified by the child as "same" or "not the same." The child receives no visual cues as the word pairs are given to him.

Interpretation of scores from tests like the Wepman should be made with caution because of unreliability of inconsistency in presentation over time or between different examiners.

This test is designed to provide measures of speech-sound discrimination ability. Under ideal listening conditions plus controlled background noise.

It is comprised of three parts:
1. training procedure
2. quiet subtest
3. noise subtest.

Materials needed include:
1. 79 plates - spiral bound
2. prerecorded test presentation tape
3. response forms
4. examiners manual.

00637

The test is available from:
American Guidance Service, Inc.
Publishers' Building
Circle Pines, Minnesota 55014

Sound boxes -

Kindergarten Auditory Screening Test
This test assesses:
1. awareness of sound
2. focus of sound
3. figure-ground
4. scanning
5. discrimination of same or different sounds
6. classification
7. auditory memory

00038

Auditory Perception: Auditory Discrimination

Age in months	Stage	Appropriate Equipment	Alternative
5-6	Distinguishes between friendly and angry talking.		
6	Demonstrates interest in human voice. Reacts to music by cooing.	Records, Radio	Observe child's behavior & reaction to music.
9	Show increasing ability to locate quiet sounds like a rattle held 2 feet from the ear.	Rattle	
15	Should be able to locate quiet sounds automatically.	Rattle, vacume, train car	Shake rattle out of child's vision. Observe reaction.
30	Gross sounds distinguished by the child	Dishwasher, car engine vacume, T.V., lawn mower.	Ask the child to identify sounds in the environment.
60	Able to respond to whispered or quietly spoken words and able to recognize such speech sounds as P, T, K, and S spoken three feet.		Whisper directions.

1. Learner Outcome: Auditory discrimination

   a. The learner will be able to determine if two sounds are the same or different.

2. Conditions

   a. Learner characteristics - Three 4 year old black children, from lower SES, enrolled in a pre-school. Attention span of 5-8 minutes.

   b. Situational variables - Small classroom containing one long, low table with chairs, and a blackboard, lesson planned for about 5 minutes.

   c. Strategy - Directive; children will be presented with a structured opportunity to compare the sounds produced by sound cylinders. I will have two cylinders containing each of the three substances and will begin by shaking each one of the three individually while directing the children to listen carefully to the different sounds produced by each one. I will attempt to elicit some comments from the children concerning qualities of each of the kinds of sounds. Then each child will have the opportunity, individually, to tell me if two paired cylinders produce the same sound or two different sounds. This will be done in a game-like spirit. Correct responses are positively reinforced.

   d. Content - Materials include six 35mm film containers, which serve as sound cylinders, and varying amounts of pinto beans, millet, and split peas.

00040

Auditory Perception: Auditory Discrimination

1. Learner Outcome: Discriminate degree of sound.

   a. To be able to identify loud and soft sounds.

2. Conditions:

   a. Learner characteristics: 2 boys, 3-11 and 4-3, from the University of Virginia Child Development Center. Normal learning ability and hearing acuity.

   b. Situational variables: A quiet room with no distractions where the sounds made in this lesson won't disturb other children.

   c. Strategy: Developmental

      1. Make sure the children know the concepts of loud and soft by having them make the noises of the following animals and subsequently discussing them:
         dog barking
         kitten purring
         lion roaring
         bird chirping

      2. Have the children drop the following objects into a tin can:
         a penny
         a dollar
         a piece of yarn
         a pebble
         a leaf
         a small rubber bear
         a wooden block

         Discuss the sound made when the object is dropped, i.e., is it loud or soft. Then put a lid on the can and have the children shake it with each object inside, discussing the sound made again.

      3. Apply the concept to the child's life: talk about his loud outdoor voice and his soft indoor voice. Ask him if he sounds loud or soft when he is:
         whispering
         crying
         telling his mother a secret
         laughing at something silly
         yelling to his friend across the play yard

   d. Content: tin can with lid, penny, dollar, yarn, rubber bear, leaf, wooden block, pebble.

00841

Auditory Perception: Auditory Discrimination

1. Learner Outcome: Discrimination of degree of sound

2. Conditions:

   a. Learner characteristics: A 4 year old girl who has already worked with the Sound Boxes and is able to match the pairs.

   b. Situational Variables: A Montessori Class

   c. Strategy: Developmental
   The teacher grades one set of cylinders by shaking each cylinder by each ear. The child grades the other set in the same manner as the teacher. After he has done a final check, he compares each cylinder in his line up with those in the teacher's to hear if they sound the same to him. No correction is made by the teacher. The child is encouraged to repeat the exercise as many times as he likes and eventually the teacher's control set is not necessary. After the child has had the concrete experience of loud, louder, loudest, soft, softer, softest these words are introduced as vocabulary and become part of the lesson.

   d. Content: The Sound Boxes are two boxes each containing 6 cylinders; one red set and one blue set. Each cylinder has a small quantity of beads or other material inside but the size of the material varies with each pair, so that when they are shaken, a different sound is created. The sounds must be graded from loud to very soft.

1. Learner Outcome: Auditory discrimination

   a. To be able to determine if the sounds were the same or not the same.

2. Conditions

   a. Learner characteristics - Three four-year olds - Juanita, Veronica, Chuckie. They are all extremely verbal and full of energy and enthusiasm. They are all anxious to talk, especially Chuckie, but find it hard to organize their thoughts in order. Chuckie is restless and domineering. All three have a sense of humor.

   b. Situational variables - In the Brothers Baptist Church there is a small office behind the chapel that was used to isolate the children. The room is extremely small with no available floor space. There is a large desk which overpowers the room. The children sit in chairs facing the facilitator. It is a quiet room away from the other children, and while it has no distracting stimulation (with the exception of choir robes) it is barren and cold. There are no educational facilities (i.e., blackboard, record player, story charts.)

   c. Strategy -

      1. Introduce concept of same and not the same using color cubes to discriminate.

      2. Ask "Is this the same as this one?" "Show me one that is not the same as this one."

      3. Present sound boxes and allow for experimentation with them.

      4. Match sound boxes with children.

      5. Have them match.

   d. Content - color cubes, sound boxes.

00043

1. Learner Outcome: Auditory discrimination.

   a. To identify rhyming words.

2. Conditions

   a. Learner characteristics - Two children, one girl and a boy. Brenda is six-years old and Jeff is five years of age. Both children have difficulty in understanding the concept of rhyming words. Both children also have attending difficulties.

   b. Situational variables - The setting will be a normal classroom. All children will be permitted to interact, if they wish, but the facilitator should key on Brenda and Jeff.

   c. Strategy -

      Place four items on the table. Identify each item with the children. Read a clue and let the child supply the answer from the items on the table:

      1. Around the neck of a man I lie. I am black and white print _____.

      2. There's something on the table that belongs to me. It opens my doors. It's a shiny silver _____.

      3. Did you eat lunch?
         Are you all fed?
         Did you eat me?
         I'm a piece of _____.

      4. Put me on your foot, please do. I belong there, I'm a _____.

      Tell me which words have the same sounds.

pie, tie, face	pie and tie rhyme
me, tall, key	me and key rhyme
bread, head, stop	bread and head rhyme
home, shoe, two	shoe and two rhyme

   d. Content - black and white print tie, key, piece of bread, shoe, The Nose Book - a Cat in the Hat Book rhyming cards.

1. Learner Outcome: Auditory discrimination

   a. To distinguish the sounds of the various phonemes.

2. Conditions

   a. Learner characteristics - Use with small groups of children. Normal or handicapped.

   b. Situational variables - use in designated area of a normal classroom. Have certain area that is a store.

   c. Strategy -

      Play a game - Let's Go Shopping. Have the children hear the different sounds each item which may be purchased. Give each child a shopping bag. One must only buy S words (words that begin with the sound SSSS). Then one can buy T and P words. Label each shopping bag with the appropriate letter symbol in sandpaper. Allow children to trace the letters.

   d. Content - shopping bags, sandpaper letters, S, P, T (lower case)
      S items - sock, salt, sugar, soup, spoon, string, sponge.
      P items - pot, pin, pen, pencil, plate, purse, peanut butter.
      T items - top, toothpaste, tie, tissue, teabag, tape.

00045

Auditory Perception: Auditory Discrimination

1. Learner Outcome-Discrimination degree of sound

   a. To be able to identify loud and soft sounds.

2. Conditions

   a. Learner characteristics - group of three children of normal ability all four years of age.

   b. Situational variables - use in the quiet area of a preschool room.

   c. Strategy -

      1. Guide children to recognize differences in volume or intensity of sound, making sure they understand the concepts, loud and soft. I will drop a book and a pencil and ask child which noise made the loudest sound. I will continue to make loud and soft noises and ask child to label them.

      2. I will ask child to make some loud noises and some soft ones, for instance, the loud roar of a lion or the soft purr of a kitten.

      3. Play a game. What do you hear? Hide object such as a clock that ticks and have child find it by listening to the intensity of the sound it makes.

   d. Content - book, pencil, penny, dollar, feather, rock, clock, alarm, record with music.

00046

Auditory Perception: Auditory Discrimination

1. Learner Outcome - Discriminate degree of sound.

   a. To be able to identify loud and soft sounds.

2. Conditions

   a. Learner characteristics - group or individual learning experience.

   b. Situational variables - normal classroom environment.

   c. Strategy -

      Introduce the concepts loud and soft using two distinct puppet voices. Imitation of a loud and soft voice.
      Give a musical instrument to each child - a drum, bells, and a triangle. As a group they will perform a loud and a soft sound, then as individuals.
      Have them discriminate among the three instruments as to loud and soft.

   d. Content - two puppets, drum, bells, triangle

06047

Following are additional suggestions for the development of auditory discrimination.

The teacher who wants to foster auditory discrimination in preparation for reading should concentrate on developing listening skills through a variety of activities. The teacher should provide opportunities for critically listening to stories, poetry, music, dialogue, etc. As the child gains skill and confidence in listening, the teacher may introduce activities in which the child participates in a speaking-listening situation. Suggestions for activities are:

1. "Finish the story" game
2. Completing a sentence
3. Retelling a story
4. Acting out stories
5. Thinking of words that rhyme
6. Recognizing some beginning and ending sounds, etc.

From these activities the teacher can determine which children can listen effectively.

-To distinguish same and not the same, I would first use actual visible objects, then introduce sound boxes.

-Guides children to recognize the differences in beat, accent, and volume of sounds. Uses records, e.g., Fun and Music (#2914). Hot Cross Buns (#2971), or Listen and Do Series (#3052).

-Many of the activities under auditory acuity may be used to distinguish between sounds as to pitch, quality and intensity.

-Teacher or one student beats a drum rhythm as all the other children listen. One child is called on to clap back the same rhythm. The game should progress from simple beats to more complex ones.

-<u>Echo Game</u> - one child who is to be speaker stands on one side of the room while another child is on the other side of the room and becomes the echo of what the speaker said.

-Little Tommy Tittlemouse - children all say poem while one child is up front with back to the class.

Little Tommy Tittlemouse	Oh me! Oh my!
Lives in a little house.	Who is knocking at my door?
Someone is knocking	It is I!

A designated child says the last line. The child at the fron must guess who is saying, "It is I."

-Develops recognition of rhyming words. Recites familiar nursery rhymes. Tells children to listen for words that sound alike as she repeats the rhyme, e.g., in "Little Boy Blue", horn and corn; sheep and asleep. Asks for other words that sound like horn or sheep. Gives words or clues if necessary.

00048

Explains that words that sound alike are called "rhyming words."

Gives familiar rhyming couplet and stops short of the last word. Extends to unfamiliar rhymes and to riddles: I am a color. I rhyme with you. What am I?

Askes children to listen for words that end alike. Begins with controlled series in which the first word given is the control: tell, walk, sell. Continues with an uncontrolled series: Father, small, cake, ball.

-Develops recognition of rhyming words.
Tells children to listen for words that sound alike as she recites familiar thymes or verses.

Asks for other words that sound like the rhyming words. Gives clues or words if necessary.

-Develops the concept that rhyming words sound alike; uses term. tells a familiar couplet and stops short of the last word.

Extends to unfamiliar rhymes and to riddles: I rhyme with hair. You sit on me. What am I?

-Say many words that start the same. This can be done in a learning center with objects and pictures that all start with the same sound. Call attention to like phonemes which occur in conversation. Play games using words that start the same way.

-Have the children listen for words that sound alike at the beginning in jingles, rhymes, and stories. They can do this with their names, objects in the room, and objects in a picture.

-Have children listen for the sound that is alike at the beginning of a list of words. Such as

man, mother, machine, monkey

Encourage children to listen for words that sound alike at the beginning during story hour, discussion periods, etc.

Later on they may do the above with words that end alike and words that sound alike in the middle.

Later the children may be asked to supply words that begin or end with a specific sound.

-Pronounce a series of words and ask the children to name the ones that are alike or different. This should proceed from simple to more complex series (man, man, boy, man, man -- truck, truck, cluck, truck).

To identify rhyming words:

-Rhyming words can be introduced in Mother Goose Rhymes, which I

00049

would use often. Then children can pick out two rhyming words, can look for rhyming words in songs, can think of words that rhyme, and can find or draw pictures of words that rhyme.

-Rhymes and jingles are very helpful in sharpening children's auditory perception. As children listen to the reading of rhymes they will become sensitive to rhyming words and to beginning and ending sounds.

What two words in this rhyme sound almost alike?
Out in the snow
Sat a black crow.
When words sound very much alike we say they rhyme. Which two words rhyme?
The little bird sings.
And flaps his wings.

Later ask the child to supply the rhyming word in the last line of each rhyme.

The big bad goat
Ate my red_____.

Little bunny, little bunny
Your floppy ears are very _____.

Select certain rhyming words and ask children to add to the list. cay say pay play may stay

Teacher pronounces a list of words. Children listen for the word which does not rhyme.
play say boy day sing wing bring run

Children give words which will rhyme with their own names, as in Mistress Mary contrary. In this work do not write words on the blackboard, as only auditory and not visual form of the word is being stressed.
Riddles calling for rhyming.

Something you eat
It rhymes with dandy

Something you wear
It rhymes with boat

Select a certain word, such as the word <u>can</u>. Children name words that rhyme with <u>can</u> from clues that the teacher or other children may give.

I rhyme with can.
I am a color. (tan)

I rhyme with ran.
I am a boy's name.(Dan)

-Rhyming words - read or make up simple jingles. After many jingles have been read, ask the children to name the words that sound alike. Later have the children supply the last word to the jingle.

<u>Discriminate degree of sound</u>. To be able to identify loud and soft sounds.

-Musical instruments, clapping, singing, talking, following directions for speaking loudly or softly, could all teach <u>loud</u> and <u>soft</u>.

00050

-Guides children to recognize the differences in volume or intensity of sounds.

Drops an eraser and a wooden block; taps on the desk and on the bulletin board; moves a chair quietly and not so quietly.

Asks: What makes a loud sound (soft sound)?

What makes a louder noise than. . .?

Gives children the opportunity to demonstrate contrasting sounds.

Illustrates differences in voices by telling a story, e.g., the Three Little Pigs. Discusses kind of voice she used and children will use in dramatizing or retelling parts of the story.

Plays "What Did You Hear?" Speaks in a whisper, saying a word, phrase, or sentence. Asks: Who heard me? What did I say?

Compares responses of children near and farther away. Repeats, using conversational tone and classroom speaking voice.

-Helps children to become aware of and compare feeling or emotion in voice sounds.

Rereads parts of a familiar story or poem in which there is dialogue, e.g., The Three Little Kittens. Discusses how kittens felt when they lost their mittens, found them soiled them. Asks: Who would you like to be the three kittens?

Gives group and individual practice in saying other sentences.

-Helps children to recognize the significance of the intonation pattern of language as a clue to meaning.

Plays "Echo" in which the teacher selects a child to stand at the rear of the room and repeat a sentence or question exactly as she says it. The class evaluates whether child "echoed" correctly: This is a pencil. Are you going home?

-Helps children to recognize differences in volume (intensity) of speech.

Plays "What Did You Hear?" Whispers a word, phrase, or sentence. Asks children in various sections of room to repeat what whe said. Compares responses of children near and far away. Gives other sentences, using conversational tone and classroom speaking voice. Encourages child who is inaudible to use "big" voice in classroom situations.

Uses puppet figures to give additional practice in volume control.

00051

-Helps children recognize that voice shows feeling or emotion. Rereads parts of a familiar story or poem in which there is dialogue. Discusses how tone of voice shows feelings of characters.

Calls on volunteers to imitate the conversation of the storybook characters.

Provides group and individual practice in saying: Happy Birthday. Hooray, it's snowing! I have new shoes. Watch you fingers! Ouch!

Have children hide their eyes. Give a simple direction to a child at various levels of loudness (loud, soft, whisper).

March to music, stamping loudly when the music is loud, tiptoeing when the music is soft.

Compare, with the children, the sounds made by ringing a large bell and a small bell (this can also be done with various sizes of toy horns and comparing the sound made by dropping a wooden block and an erasure).

Other comparisons may be made by tapping on a desk and on a piece of cloth, playing various notes on a piano, slamming a door and then closing it gently, etc.

Pretend to be a train and leave the station. Disappear in the distance and then arrive at the next station. Have the children explain when their voices are to be soft and when loud.

After story hour, take the opportunity to note stress on certain words. ("What word did I say the loudest when I read, I think I can").

-Read the book, The Loudest Noise in the World, Benjamin Elkin, to the children. After discussing the book, let the children talk about:

Sounds I like
Sounds I Don't Like

-Using a xylophone or other musical instrument, have children say which is the louder note of two played.

00052

Auditory Memory

Auditory memory involves short and long term recall which involves several auditory skills. This is a skill which is important to language development if one accepts the theories of auditory feedback systems. It concerns the time element involved between a speaker's utterance, the listener's perception of the utterance and his reply or repetition of the signal. Auditory memory tests are usually repeating digits, sentences, and nonsense syllables. Auditory memory is highly related to auditory synthesis, for example, if a child has difficulty going from parts-to-whole (synthesizing a consonant-vowel-consonant combination) it is not unusual to find him two to three years delayed in auditory memory. Memory deficiencies may be observable as young as four years of age. This is a skill which is important to language development if one accepts the theories of auditory feedback systems. It concerns the time element involved between a speaker's utterance, the listener's perception of the utterance and his/her reply or repetition of the signal. Most measures of auditory memory have dealt only with the ability to recall and repeat a series of digits. Many studies conclude that auditory memory increases with age (Metraus, 1942; Beebe, 1944; Kaufman and Ivanoff, 1969; Robbins, 1942), but none agree as to rate of increase and at what age auditory memory reaches a plateau.

Auditory memory must exist before a child can sequence, synthesize and put meaning to sound. It is usually not isolated as a separate construct so measures and conditions in the environment involve other skills as well as auditory memory.

Measurement. Digit span tests are the most common measures of a child's memory span. The Stanford Binet Intelligence Scale, Welhsler Intelligence Scale for Children and Illinois Test of Psycholinguistic Abilities all have digit span subtests.

00053

Auditory Memory

Age in Months	Stage	Appropriate Equipment	Alternative
24-30	Able to repeat 2 digits in sequence (ITPA) (Cattell) (SB)		
30-36	Able to repeat 3 digits with 2 trials (ITPA) (Cattell) (McCarthy) (SB) Recalls one of eleven items from story adult tells (McCarthy).		
36-66	Able to repeat 3 digits on first trial (ITPA, McCarthy).		
42-72	Able to repeat 4 digits on second trial (ITPA) (McCarthy) Recalls two of 11 items from a story adult tells (McCarthy).		
48-60	Able to repeat 4 digits on first trial (ITPA) Recalls 3 of 11 items from a story adult tells (McCarthy).		
54	Repeats 2 digits backwards (McCarthy) Recalls 4 of 11 items from story adult tells (McCarthy)		
60-72	Able to repeat 5 digits on second trial (ITPA). Recalls 5 of 11 items from story adult tells (McCarthy).		
66	Recalls 6 of 11 items from story adult tells (McCarthy).		

00054

Age in Months	Stage	Appropriate Equipment	Alternative
72-95	Repeats 3 digits backwards (McCarthy. (SB). Able to repeat 5 digits on first trial (ITPA).		
78	Recalls 7 of 11 items from story adult tells (McCarthy).		
90	Recalls 8 of 11 items from story adult tells (McCarthy).		
102	Repeats 4 digits backwards (McCarthy).		

1. Learner Outcome: Auditory memory.

   a. To identify the sounds of the various phonemes.

2. Conditions

   a. Learner characteristics - Group of three children, five years of age - two boys and one girl.

   b. Situational variables - a shopping corner set aside in a pre-school room.

   c. Strategy -

      Play a game - Let's Go Shopping. Have the children identify each item which may be purchased. Give each child a shopping bag. Have them buy S, T, or P items (or any desired sounds). They must identify them correctly in order to complete the purchase. Label the shopping bags with the appropriate letter symbols in sandpaper - allow the children to trace the letters.

   d. Content - three shopping bags, sandpaper letters - S,T,P (lower case) S items, P items, and T items.

00056

1. Learner Outcome: Auditory memory. Short and long term recall which involves several auditory skills.

2. Conditions

   a. Learner characteristics - any preschool child normal or handicapped, unless auditorily impaired.

   b. Situational variables - isolated room that is quiet with no auditory or visual distractions.

   c. Strategy -

      Game - What's Wrong. Name several categories of things with a few things not fitting. For example: dog, cat, desk, fish, lamp, rabbit, and pig. See if the child can name the two things that are not animals. Then see how many of the animals he remembers. The game may be varied and used various ways.

   d. Content - category vocabulary.

-Gossip - A child rapidly passes a message to the one beside him and so on around a circle or down a row. The last child then tells the group what he heard. The first child repeats the original message and the two are compared.

00057

Sequential Retention and Synthesizing Sound

Sequential retention and synthesizing includes the following abilities: (a) to be able to determine the sequence of sounds; (b) to be able to determine what was the length of time between sounds (first, next, last); and (c) sound blending ability to be able to go from parts-to whole.

The literature on auditory vocal analysis and synthesis suggests that both are an outgrowth of concern over auditory memory and sequencing abilities. Orton was convinced that speech and reading problems are the result of inability to recall sounds in proper temporal sequence (Aten and Davis, 1968). More recently a study by Huffman and McReynolds (1968) states "sequential behavior is necessary for the acquisition of language skills." One would have to agree that both analysis and synthesis of words require sequencing skills.

Riper (1950) defines analysis and synthesis as the vocal phonic ability of a child to break down and recombine sound sequences. Johnson and Mykelbust (1968) report that in addition to their studies Ingram and Gates (1968) have studied children who could not build words from their sound components due to synthesizing problems, but few research studies have dealt with both analysis and synthesis skills of children. Additional references indicate that these skills should be present in the child of six or seven years of age. Van Riper (1958) feels that vocal phonic ability, although based to a considerable degree on natural abilities, is probably learned and increases with age. It is apparent that auditory vocal analysis and synthesis skills play an important role in the total language system, both spoken and written.

Several studies have reported upon the relationship of synthesis, or sound blending skills, and the language skill of reading. The conclusion is that there is a significant correlation between synthesis level and reading achievement (Bannatyne and Wichiarajote, 1969).

Measurement. One test to assess vocal phonic analysis and synthesis has been designed by Gray (1963). The auditory vocal ability test was constructed on the following basis:

1. The tests of vocal phonics are tests of auditory perception. Words or nonsense syllables could be used for this purpose because the concept of "meaning" is not related to the direct issue of this study; which is, the individual's ability in analyzing a series of speech sounds presented orally into a "whole." Words, rather than nonsense syllables, were decided upon for this experiment for two reasons; (a) it appeared to be much easier to give examples of what is expected of the subject with words and (b) the interest of the subject was thought to be better maintained with the use of words.

00058

2. Again, although "meaning" is not a direct issue in this test, familiar words were chosen over unfamiliar words to control any possible hesitancy on the part of the subject. It is conceivable that an unfamiliar word might be an intervening variable which could alter the results. With this in mind, a group of nouns were selected from Horn's 1003 most frequently used words by kindergarten children.

3. Oral responses by the subject are necessary on both vocal phonic tests. The synthesis test calls for the subject to synthesize isolated phonomes into a word and the word is given to the examiner orally. The analysis test calls for the subject to analyze a word presented by the examiner into its isolated phonemes presented orally. Because of this oral method of presentation by the subject, the words used on the test should be chosen for ease of articulation. This provision should eliminate for most of the subjects, the necessity of having to produce difficult combinations of sounds orally which might have an effect of their willingness to synthesize the phonemes or analyze the words. The words chosen for the synthesis and analysis tests contained only those phonemes which would be correctly articulated by four year old children, according to the norms established by Templin.

4. The tests were constructed so that they would increase in difficulty every five words. That is, each test was comprised of five-phoneme words, five six-phoneme words and five seven-phoneme words, thus totaling thirty words for each of the two vocal phoric tests. The range from two through seven phonemes was decided so that the tests would be more discriminating than if the range were more narrow.

Following are the two tests of word phonic analysis and synthesis.

00059

PHONIC ABILITY TEST
(Gray)

Synthesis

		2 pts.	1 pts.
1.	boy		
2.	cow		
3.	ice		
4.	knee		
5.	toe		
6.	neck		
7.	fish		
8.	boat		
9.	dog		
10.	suit		
11.	glass		
12.	smoke		
13.	penny		
14.	dress		
15.	floor		
16.	parade		
17.	Sunday		
18.	rabbit		
19.	cracker		
20.	window		
21.	fifteen		
22.	potato		
23.	napkin		
24.	fireman		
25.	airplane		
26.	elephant		
27.	animals		
28.	woodpecker		
29.	pumpkin		
30.	children		

Synthesis Raw Score _____

Analysis

		2 pts.	1 pt.
1.	pie		
2.	bee		
3.	tie		
4.	egg		
5.	ear		
6.	church		
7.	pig		
8.	cat		
9.	game		
10.	feet		
11.	paper		
12.	flag		
13.	paint		
14.	ladder		
15.	truck		
16.	plant		
17.	candy		
18.	circus		
19.	woman		
20.	lettuce		
21.	banana		
22.	soldiers		
23.	ice cream		
24.	reindeer		
25.	bluebird		
26.	umbrella		
27.	butterfly		
28.	telephone		
29.	yesterday		
30.	Christman		

Analysis Raw Score _____

Total Raw Score _____

Name Code:_____ B.D._____ Age_____ School_____

IOC_____ Intelligence Test Score_____

Date_____ Examiner_____

00060

BODY PARTS TEST OF SYNTHESIS

Name_____Date_____Age____School_____

INSTRUCTIONS:

Say, "Stand in front of the little boy. Point to his cap, eyes, etc." (The subject identifies all the parts of the body and the articles of clothing before the test is administered. The purpose of this identification is so that the subject will be familiar with the items included in the test.)

"Now, we are going to play another game with words and sounds. I will say some sounds. You listen carefully and put them together to make a word. The word that you will hear will either be some part of the boy's body or something that the little boy is wearing. You listen closely and then point to what I say. Are you ready? i - z. Point to his i - z."

1. ie - z _____
2. ee - r _____
3. Kn - ee _____
4. m - ou - th _____
5. f - ee - t _____
6. sh - oe - z _____
7. h - a - ir _____
8. c - a - p _____
9. s - o - ck _____
10. l - e - g _____
11. h - ea - d _____
12. n - e - ck _____
13. sh - ir - t _____
14. a - r - m _____
15. h - an - d _____
16. p - a - n - t - s _____
17. f - in - g - er - z _____

00061

Auditory Perception: Sequencing and Synthesizing Sound

Age in Months	Stage	Appropriate Equipment	Alternative
28	Able to blend 2 sounds with picture of the object (ITPA).		
30-46	Can recall chain of 4 words (McCarthy). Repeats sentences of 4 words (WPPST). Repeats tapping sequence on xylophone notes (1,2,3,4) (McCarthy).		
42-48	Repeats tapping sequence on xylophone notes (1-3-4) (McCarthy).		
46-49	Repeats sentences of 7 words (WPPSI).		
49-61	Repeats sentences of 9 words (WPPSI).		
50	Able to blend 3 sounds with picture cues (ITPA).		
54-60	Repeats tapping sequence on xylophone notes (2-4-1) (McCarthy).		
61-67	Repeats sentences of 12 words (McCarthy).		
66	Repeats tapping sequence on xylophone notes (4-1-2-3) (McCarthy).		
73-79	Repeats a sentence of 13 words (WPPSI).		

29000

Auditory Perception: Sequencing and Synthesizing Sound

Age in Months	Stage	Appropriate Equipment	Alternative
78-80	Repeats tapping sequence on xylophone notes (2-3-1-4) (McCarthy).		
90-96	Repeats tapping sequence on xylophone notes (1-4-3-2-3) (McCarthy).		
96	Able to blend 4 sounds (ITPA).		

00053

Auditory Perception: Synthesis

1. Learner Outcome: To develop synthesis, the ability to blend sounds.

2. Conditions:

   a. Learner characteristics: Ten boys and fourteen girls ages seven and eight who need practice blending sounds.

   b. Situational variables: A quiet corner in a Primary 2 classroom.

   c. Strategy -

      1. Developmental
      2. Procedure
         a. The children choose six cards.
         b. They announce their name to the tape recorder.
         c. Next, they say the card number and sound out the words or sounds on their cards to the recorder.
         d. Both actual and nonsense words are used to test blending ability.

   d. Content: Thirty cards with familiar sounds written on them which make real and non-real words, tape recorder, chart of directions.

3. Evaluation: After the children learned to use the tape recorder, they were anxious to do this activity. The tape recorder was highly motivating.

   This activity was a good way to check each individual's synthesizing skills. Using non-real words gives a truer picture of the child's knowledge of sounds. This learning center can be changed to check various skills once the children master the use of the recorder.

00064

1. Learner Outcome: Sequencing and synthesizing sound

   a. To be able to determine what was the sequence of sounds.

2. Conditions

   a. Learner characteristics - Group of three normal four-year olds. All are cooperative and easy to work with.

   b. Situational variables - used in a room which contained no toys, puzzles, etc. The room was a conference room with a couple of long tables and some chairs. There was lots of floor space due to the large size of the room.

   c. Strategy -

      1. Game - Follow the Leader. The leader will ask children to clap, jump, skip, and see if he performs the tasks in the correct sequence. Relate to child which comes first, next, or last. Continue giving examples until you think child understands the concept.

      2. Present objects and pictures that have symbol of word with same initial "b" sound. Have child tell where he hears "buh" sound. Next present sound in the middle or end of a word and have child tell where sound is located in the word.

   d. Content - ball, bat, bag
      bib, box, bug
      pictures of boy, basketball, baby, crib, cab, football, grab, tuba, tube.

00065

Auditory Perception: Auditory Memory and Sequencing

1. Learner Outcome: To develop sequencing and auditory memory.

2. Conditions

   a. Learner Characteristics: Tim is a very alert five-year old kindergarten student, who works eagerly and cooperatively. He has developed a fine set of readiness skills. For example, he can identify both letters of a consonant blend which starts a word, such as s-p in spoon.

   b. Situational variables: Our lesson was carried on in the hall outside the kindergarten room. We sat next to each other with two big wooden blocks between us.

   c. Strategy:

      The lesson was an experience in sequencing and auditory memory. (Directive) A set of rhythm instruments: sticks, a triangle, bells and a tambourine is used. The child plays each instrument and identifies it before we began. I then concealed the instruments behind the wooden blocks and played different pattern combinations, starting with simple ones and becoming progressively more complicated. After each pattern Tim identified what he heard and the number of times he heard it.

   d. Content: Materials needed for this plan are rhythm instuments and large blocks or some type of dividing screen. It must be conducted in a quiet setting so there will be no confusing background interference.

00066

1. Learner Outcome: Sequencing and synthesizing sound

   a. To be able to determine what was the sequence of sounds.

2. Conditions

   a. Learner characteristics - used three preschool children who were unsure of the concepts first, middle, and last. They have trouble ordering their thoughts to describe a sequence.

   b. Situational variables - make sure children are in an area of the room in which they feel comfortable and at ease.

   c. Strategy -

      Introduce concepts first, next, last, using a line of color cubes. Each child will discriminate first, next, last. Is the blue cube first? Which cube is next?
      Play a game. Follow the leader. Notice repetition of a sequence demonstrated by the facilitator. Increase the complexity as you go along.
      Then play another game - which came first? Verbal explanation of a sezuence of a sequence of sounds demonstrated by the facilitator.

   d. Content - color cubes

00067

Auditory Perception: Auditory Memory and Sequencing

1. Learner Outcome -

   a. To develop the ability to follow directions.

   b. To develop auditory memory.

2. Conditions -

   a. Learner characteristcs: K - 3 gr.

   b. Situational variables - small or medium size group either inside or outside

   c. Strategy: Directive

   d. Procedure:

      1. The instructor or a child acts as the leader and he stands facing the other children and fifty feet from them.
      2. The rest of the children must stand in a line side by side.
      3. The game is played similarly to "May I"
      4. The leader tells the first child to "Take one giant step and one baby step." The leader then tells the second child to "Take a ballerina turn, two hops, and one tip-toe step."
      5. The play continues along these lines with the leader giving each child at least two directions until one child reaches him and then he becomes the leader.
      6. If a child forgets one of the directions or if he does then out of order or incorrectly, he must return to the starting position.
      7. Some other directions include: "Hop on one foot" "skip," "Walk normally," "Walk sideways," "Crawl," "Walk on your heels," "March."

      8. Because this requires motor, it also aids in developing static and cynamic balance, agility, coordination, and muscle tone.

3. Content - none

06068

Following are some general suggestions for developing sequencing and synthesizing of sound:

To be able to determine what was the sequence of sounds?

-Sequence of sounds can be developed for children by following a leader's sounds (Clap, whistle, stamp). Children can imitate the sounds or on a higher level they can verbally tell the sequence of sounds.

-Words containing the "f" sound - The material presented with the "f" sound will suggest a way to proceed with the other consonants in this bulletin.

Key words:

four	father	for	fast
fun	find	found	funny

Teacher pronounces one word at a time and the children listen for the sound of "f". Occasionally, a word not beginning with the "f" sound may be inserted as a "fooler." Child indicates words which do not begin with the sound "f".

Words in which the "f" sound may be at the beginning, in the middle, or at the end of the word.

family	muff	leaf	breakfast
puffed	feed	traffic	Billy Goat Gruff

The child may place his right hand on the left side of his desk if sound is at the beginning of the word; in the middle of his desk if the sound is in the middle of the word; on the right side of his desk if the sound occurs at the end of the word.

-Guide children to recognize words by their initial sounds. Explains that she will call some children to stand in front of the room. Selects children whose names begin with same sound but does not tell children basis of selection. Asks each child selected to identify himself.

Ask class to pronounce in unison the name of each child as she points to him. Questions children to elicit reason for selection of these children. Supplies answer if children are unable to. Repeats; eventually permits children to help make selection.

Show pictures of objects, names of which begin with the same sound.

Asks children to listen for words that begin like the first word she says: boat, boy, cat, book.

00059

Give practice in supplying words starting with the same initial sound as a word spoken by the teacher, e.g., Who can tell us a word that starts with the same sound as desk (table, ball, etc.)?

-Guide children to recognize initial sounds of words. Start with children's names. Martin supplies a word beginning like his name. All children whose names begin like his, stand and give additional words beginning with M.

Extends to other children's names.

Introduces "Name Them" in which she gives a series of three words, two of which begin like the first words names, e.g., mop, toy, mother. Calls on individual children. Increases the number of words in the series up to seven.

Repeats the activity, using a series not controlled by the first word, e.g., sand, baby, tall, basket.

Continues the activity, using pictures of familiar objects, places, or things, whose names begin with the same letter. (Arranges pictures on chart rack or on chalk ledge.) If child's response is correct, but does not begin with the letter needed, the teacher indicates this and asks for a word beginning like the desired word.

00070

Classification, Integration and Monitoring of Sound

Classification, integration and monitoring of sound involves what the sounds and words mean. More specifically it involves the ability to distinguish and identify common sounds in the environment; to associate meanings with spoken words; to obtain meaning from sentence structure; to follow simple explanations; to carry out one-step directions given orally then two-step directions, and to gain an understanding of what to look and listen for in experiences; "tune in" when directed to.

This ability to associate sounds with sound sources may be correlated with intelligence, auditory memory, ability to localize sounds, and acoustic discrimination. Myklebust (1967) describes difficulty in obtaining meaning from sound as agnosia which is a condition where the individual cannot attribute meaning to any sounds in his auditory world. It tends not to occur unless aphasia is also present.

The following areas of comprehension of sounds that carry meaning have been identified by Farrald and Schamber (1973).

1. Comprehension meaningful units of sound vary in length and organizational complexity. The child learns to comprehend word meanings, thought units, sentences, paragraphs and larger units like a long story.

2. Literal comprehension involves recognition and recall of ideas and information explicitly stated in spoken or printed units: Here the child must be able to:
   Recognize and recall details,
   Recognize and recall main ideas,
   Recognize and recall sequence,
   Recognize and recall relationships and
   Recognize and recall character units.

3. Organization or reorganization requiring that the child analyze and synthesize information or ideas expressed in spoken or printed units. The child must be able to: classify into categories; outline information or ideas in some serial or sequential form; summarize a thought unit; and synthesize or consolidate information or ideas.

4. Inferential comprehension which requires the child to infer meaning beyond that which is explicitly stated in spoken word. The child needs to infer supporting details, main ideas, sequence, comparisons, cause and effect relationships, and characer traits.

5. Evaluation or evaluation judgements based on a comparison of the ideas presented and external criteria (other sources)

06071

and internal criteria (child's own experiences, knowledge, and values) and focusing upon the qualities of accuracy, acceptability, desirability. The child needs to be able to utilize past experience to differentiate reality from fantasy; fact from opinion and evaluate adequacy and validity.

The comprehension skills reflect a hierarchy.

00072

Auditory Perception: Classification, Integration, and Monitoring of Sound

Age in Months	Stage	Appropriate Equipment	Alternative
7-8	Responds when called. Raises arms when mother says "come up" and reaches toward child.		
8	Looks at daddy when daddy is named		"Look at Daddy" Observe response
9-10	Responds to verbal requests like "bye-bye"; activity stops when hears "no-no" or his name.		Give verbal request, for response.
11-12	Gives toy on request when accompanies by gesture.	Ball	"Give me the ball" (point to ball).
13-14	Knows own name		
15-16	One object in box identified when named. Finds "baby" in picture when asked.	Box-objects such as rattle, doll. Book containing pictures of familiar objects.	"Point to the rattle" "Point to the baby" Ask child to point.
16	Recognizes hair, mouth, ears, and hands when named.		Hair mouth, nose, eyes of doll.
21	Will follow a short series of related commands.	Bring me the doll. Show me the book.	
23	Carries out 4 directions with ball.	Ball	Throw me the ball. Bounce the ball. Catch the ball. Run for the ball.

Auditory Perception: Classification, Integration and Monitoring of Sound

Age in Months	Stage	Appropriate Equipment	Alternatives
24	Likes to listen to reason of language, not just the sound.		
30	Obey simple commands spoken quietly at 3 feet such as "give the doll to mother" (SB).	Doll	Give simple commands
37-42	Understands simple commands (Cattell).		
54	Child can perform three sequential commands given verbally (SB).		

00074

1. Learner Outcome: Classification, integration, and monitoring of sounds.

   a. To distinguish and identify common sounds in the environment.

2. Conditions

   a. Learner characteristics - Three 3-year old girls - Buffey, Sissy, and Nicole. Sissy and Buffey are shy and cling to each other for support. All three respond better to learning situations which involve actions, songs and games. They seem to be afraid of direct commands.

   b. Situational variables - An isolated room away from other children. The room is extremely small with no available floor space. The room is quiet, but not condusive to optimum learning.

   c. Strategy -

      Play a game - What sound is this? Each child in turn is blindfolded and required to identify several of the following noises: hand clapping, door opening, light switch turned on and off, a knocking, cabinet opening, pages of a book turning, paper crumbled, a whisper, another child's voice, a drum, a hum, a clock ticking.

   d. Content - blindfold, clock, paper to crumple, book, drum

1. Learner Outcome: Classification, integration, and monitoring of sound.

   a. To associate meanings with spoken words.

2. Conditions

   a. Learner characteristics - group of normal four and five-year old children.

   b. Situational variables - any preschool classroom.

   c. Strategy -

      Sing a song -- If You're Happy and You Know It. Then ask questions -- How did my voice sound when I was mad? How do you sound when you're mad? Are you loud or soft? When you're sad? I want to hear you sound sad. Are you happy? Sometimes a person's voice tells how he is feeling.

   d. Content - "If You're Happy and You Know It" Source unknown.

00075

1. Learner Outcome: Classification, integration and monitoring of sound.

   a. To gain an understanding of what to look and listen for in experiences; "tune in" when directed to.

2. Conditions

   a. Learner characteristics - Six children. The older three children are impatient to speak and have difficulty waiting for another child to finish speaking before their turn. They are also easily distracted.

   b. Situational variables - normal classroom conditions.

   c. Strategy -

      I will read the story of The Three Bears. This contains repetition which allows the child to understand its meaning. Before I read the story, I will ask the children to listen carefully so he will be able to answer questions such as: "Who slept in the Bears' bed?, What did she eat?, Why didn't she eat Father Bear's porridge?", etc.

   d. Content - The Three Bears, questions.

1. Learner Outcomes: Classification, integration, and monitoring of sound.

   a. To obtain meaning from sentence. To follow simple explanations carry out one-step directions given orally, then two-step directions, etc.

2. Conditions

   a. Learner characteristics - group of eight children all six-years of age.

   b. Situational variables - any classroom environment.

   c. Strategy -

      Movement Education. Ask child to do things. For example: "Touch your eye. Touch your foot. Show me how a bunny hops. Can you touch your knee and eye at the same time? Can you skip to the left, and hop to the right, and then be seated?"

   d. Content - Movement Education Lesson Plan, carpet squares.

00676

1. Learner Outcome: Auditory perception skill, classification, integration and monitoring

   a. The child will listen to taped sounds of familiar objects, select a picture which relates to the sound made and place the picture in a pocket chart

Examples:	Sound	Picture
	running water	fountain
•	dog barking	dog
	leaves cracking	girl walking in leaves
	horn	car
	cough;sneeze	boy with handkerchief

2. Conditions

   a. Learner characteristics - 12 children; 4 1/2 and 5 years of age 4 girls - caucasian; 8 boys - 2 black; 6 caucasian. All very cooperative and enthusiastic

   b. Situational variables - Classroom situation, Activity set up as a learning center - one or two children may engage in the activity during free play.

   c. Strategy - Directive

      1. During group activity "how to use" the tape recorder is reviewed.
      2. Teacher explains the objective: "I have several pictures on these cards. Name the pictures for me. As the teacher shows the cards she encourages class participation. At the back of the room there is a tape recorder with different sounds recorded on it. Each sound recorded is related to one of these pictures; as you move around the room to the different centers go to this center and listen and find the pictures of the sounds you recognize. When you complete the activity turn the card chart over to see if your pictures match the pictures on the back.

   d. Content - pocket chart for pictures, tape recorder w/recorded familiar sounds of the environment. Pictures of: clock, dog, running water, finger (snapping), lips pucker for whispering, hands (clapping), car, boy laughing, child walking in fallen leaves, horse, hammer, saw.

   e. Evaluation - 10 children responded to the activity. 7 children completed the activity before turning to the back of the chart to look at pictures. All the children enjoyed listening to the taped sounds and selecting the picture which related to the sound made. 2 children returned to the listening center to "play" the game together. Several children asked if I had another tape with "harder" sounds and "lots" of sounds. The children enjoyed the activity the success they had in finding the picture that matched the sound. Later the children used the tape recorder to tape their own sounds and then have a companion guess the sound he made. (dog barking, cat meow, horse walking, Indian,etc.)

00077

Following are some general suggestions to develop classification, integration, and monitoring of sound. What do the sounds and words mean?

a. To distinguish and identify common sounds in the environment.

-Children close their eyes and describe all the sounds that they hear. I give them many chances to identify sounds, from records and from the actual objects.

-Use of rhythm instruments to develop recognition of differences in sounds of instruments.

-Plan experiences in listening to street sounds to determine their sources.

Take children outdoors to listen to sounds, e.g., rumble of subway, auto horn, child crying, dog barking, woman calling, construction noises, boat whistles, etc.

Select story, e.g., The City Noisy Book, by Margaret Wise Brown. Read to children, awaiting their response after each question in the story. Relate story to children's experiences of listening to street sounds.

-Provide experiences in identifying sounds in room, e.g., door slamming, clock ticking, paper rustling, ball bouncing, footsteps, etc.

-Direct children's attention to sounds outside of classroom: sounds of weather - the rain, thunder, wind; construction and transportation sounds; people sounds; animal sounds; sounds inside of classroom; door opening or closing; furniture being moved; people's voices.

Use descriptive words in talking about sounds: pitter-patter of rain drops; claps of thunder; wail of siren; the scraping of a chair; thump of marching feet.

-Encourage finer discrimination of sounds heard. Uses appropriate words and encourages children to use them in response.

Show a group of bells as jingle, bicycle, desk, alarm clock; rings each in turn. Asks children to name bells; supplies answer if necessary.

Give practice in identification through bell ringing game.

Present rhythmic sounds which children know; uses piano or recording.

Introduce the game "What did I do?" Selects child to be "It" to carry out an activity which she whispers to him.

Play records of animal sounds; uses pictures or toys.

Replay the record. Talk about the sounds, using precise vocabulary.

-Introduce games to help children identify everyday sounds. What Is It? Children close their eyes and identify sounds in the classroom; steam in the radiator, a scraping chair, a cough, the click of a light switch, the whirr of the pencil sharpener, hopping, skipping, marching of other children; knocking at the door; pouring water from one container into another.

Who's There? The teacher forms children into a circle; selects one child to be "It" and stand in center of circle with eyes closed, while other children skip or march around him. At a signal from the teacher, "It" extends his arm and points to a child, saying: Who's There? The child responds in a set pattern; Hello John! What's my name? If John guesses right, he gets another turn at being "It".

-Take the children on a walk around the school grounds or halls. Stress sounds heard, (car going by, bird, wind in the trees, dog barking, clock ticking, steps in hall, etc.). Another time the teacher might say, "I hear a sound in the hall. What is it?" or"I hear a car horn. Can you make it?" (This is imitating sounds and children need to hear many and various sounds before they are ready to imitate them.)

-The teacher makes the sounds associated with familiar animals and the children name the animals. (Another variation might be to ask the children to pretend to be an animal and make the sound.) The old favorite, "Old McDonald Had a Farm" can produce many animal sounds.

-Let the children identify sounds heard in stories and poems and records.

-The children close their eyes and the teacher makes familiar sounds and asks the children to identify them (crushing paper, shutting the door, writing on chalkboard, etc.).

b. To associate meanings with spoken words.

-Provide activities for word identification. Tells or reads rhymes, stories, and poems that contain refrains, sound sequences, or amusing words.

-Encourages children to use words or word sounds that suggest familiar things.

-Children should be encouraged to respond to changes in mood. This can be done with records, tapes, and books.

00079

-I am thinking of a Word - Think of a word and then describe it to the children. Such as:
"I am thinking of a word that tells something you sit on." (chair), "I am thinking of a word that tells something cold and it falls from the sky in the winter." (snow).

c. To obtain meaning from sentence structure.

d. To follow simple explanations; carry out one-step directions give orally, then two-step directions,etc.

-Give direction where immediate response is expected. Gives one direction and demonstrates response expected: Carry your chair this way.

-Give series of simple consecutive directions one at a time and waits for response before giving next direction: Take off you hat and coat. Put your hat in you coat sleeve (demonstrates). Hang your coat on a hook. Await children's reaction. Assists if help is needed.

-Simon Says - Children stand in a circle with a leader in the middle. Whenever the leader gives a direction and prefaces it with "Simon Says" the children must respond to the directions. If the leader does not say "Simon Says", the children should not respond to the direction.

-Bring me - The teacher calls the name of a pupil in the group and says, "Bring me the pencil." The child must correctly respond to the direction.

-Give to each child a piece of paper and crayons. Give the following directions (or any others you can think of).

a. Draw a blue line at the top of the paper.
b. Draw the first letter of your name in the middle of your paper with red crayon.
c. Draw a circle with your yellow crayon at the bottom of your paper.

-Provide opportunities for children to carry out more complex directions. Such as:
Hop on one foot to the back of the room. Pick up the green pencil and hop on your other foot to Tom's desk and give him the pencil. Hop back to your seat.

Walk to the bell on by desk. Ring it three times. In your left hand put the bell down and walk to your seat.

Stand to the right of your chair. Touch your right hand to your left ear. Turn around in place and sit down.

Children should be reminded to listen to all of the directions before carrying them out.

00080

e. To gain an understanding of what to look and listen for in experiences; "tune-in" when directed to.

-Takes time to answer questions of individual children. Answers child's direct question: When John has finished, then it will be your turn.

00081

COMPETENCIES NEEDED TO FACILITATE DEVELOPMENT OF AUDITORY PERCEPTION

Cognitive Competencies for Trainees

To be able to define each of the below give an example of a learning condition for each and an informal assessment.

Awareness of sound
Focus of sound
Auditory figure ground discrimination
Auditory discrimination
Auditory memory
Sequencing and synthesizing sound
Classification, integration and monitoring of sound.

To be able to cite noteable research findings relating to auditory perception.

Skill Competencies

To effectively provide a learning environment to emphasize:

1. awareness of sound
2. focus of sound
3. auditory figure ground discrimination
4. auditory discrimination
5. sequencing and synthesizing sound
6. classification, integration and monitoring of sound
7. auditory memory

To effectively assess a child's auditory perceptual development in the following areas:

1. awareness of sound
2. focus of sound
3. auditory figure ground discrimination
4. auditory discrimination
5. sequencing and synthesizing sound
6. classification, integration and monitoring of sound
7. auditory memory

00082

AUDITORY PERCEPTION MODULE

SCHEDULE AND REQUIREMENTS

Students will gain the competencies of the Auditory Module in the following ways:

1. Complete the suggested readings and apply them to the cognitive competencies.

Mann, M.E., Cook, S., and Young, K. Language Development: Auditory Perception.

Rampp, D.L. Auditory processing and learning disabilities. Proceedings of the first annual Memphis State University Symposium, 1973.

Falek, V.T. Auditory processing for the child with language disorders. Exceptional Children, February, 1973, pp. 413-416.

Falck, V.T. Application of management principles to instructional methods. Exceptional Children, February, 1973, pp. 401-403.

Moore, D.F. Early childhood-special education for the hearing handicapped. Paper presented at National Leadership Training Institute in Early Childhood Education, Washington, October, 1971.

Chalfant, J., Kirk, G., and Jensen, K. Systematic language instruction: An approach for teaching receptive language to young trainable children. Teaching Exceptional Children, Fall, 1968, pp. 1-13.

Klinzing, D.G. Listening comprehension of preschool age children. The Speech Teacher 221, 2, March, 1972, pp. 86-92.

Arnold, R.D., and Wist, A.H. Auditory discrimination abilities of disadvantaged Anglo- and Mexican-American children. The Elementary School Journal, March, 1970, pp. 295-299.

Friedlander, B.Z. and DeLara, H.C. Receptive language anomaly and language/reading dysfunction in "normal" primary grade school children. Psychology in Schools, January, 1973 10, 1, 11-18.

2. Evaluate target children in appropriate areas of auditory perception and;

00083

3. Plan lessons for target children in the appropriate areas of auditory perception. This information should be kept in your notebooks and will be checked by your field supervisor.

Day 1 - Overview Lecture

Day 2 - Lecture on the Hard of Hearing Child

Day 3 - Implement evaluation procedures in field centers with target children.

Day 4 - Discussion of readings
View video tapes of children with auditory perception delays.

Day 5 - Implement learning environments in field centers.

Day 6 - Cognitive Competency exam

Trainees will be taped implementing one or several auditory perception experiences. The developmental or directive processes may be used or a combination of both. In either case the strategy should be identified on the lesson plan.

00084

Required Readings for Auditory Perception

Rampp, Donald L. Auditory Processing and Learning Disabilities. Proceedings of the first annual Memphis State University Symposium.

Children with Auditory Deficits

Falck, V.T. Application of Management Principles to Instructional Methods. Exceptional Children. Vol. 31, No. 5, February, 1973, pp. 401-403.

Falck, V.T. Auditory Processing for the Child with Language Disorders. Exceptional Children. Vol. 31, No. 5, February, 1973, pp. 413-416.

McGrady, H.J. Language pathology and learning disabilities in H. R. Myklebust (Ed.) Progressive Learning Disabilities. New York: Gruen and Strappum. 1970. pp. 199-233.

Moore, D.F. Early childhood special education for the hearing handicapped. Paper presented at National Leadership Training Institute in Early Childhood Education. Washington, D.C. October, 1971.

Arnold, R.D., and Wist, A.H. Auditory discrimination abilities of disadvantaged Anglo- and Mexican-American Children. The Elementary School Journal.

Chalfant, J.; Krik, G.; and Jensen, K. Systematic language instruction: an approach for teaching receptive language to young trainable children. Teaching Exceptional Children. Fall, 1968. pp. 1-13.

Additional Recommended Readings

Children with Auditory Deficits

Harris, G.M. Language for the preschool deaf child. New York: Grune and Stratton, 1963.

Film: First Foundations

Learning language begins with listening. Before the child can talk, he asks questions by gestures or noises because he wants answers and is ready to learn from them. Earliest talk concerns what is happening now, thus language grows its roots in first-hand experience.

It is important that family talk be the kind that encourages an individual response to experience, or an individual point of view. Early deficiency in that respect can be made up to some

00085

extent in school, but to what extent is not yet known.

30 minutes/Black and white
Purchase: $250.00
Rental: $ 30.00
Source Time Life Films
43 West 16th Street
New York, N.Y. 10011

00086

REFERENCES

Aten, J. and Davis, J. "Disturbances in the perception of auditory sequence in children with minimal cerebral dysfunction". Journal of Speech and Hearing Research. 1968, 11 (2), 236.

Bannatyne, A.D., and Wichiarajote, P. "Relationships between written spelling, motor functioning and sequencing skills". Journal of Learning Disabilities. 1969, 2 (1), 11.

Beebe, H. "Auditory memory span for meaningless syllables". Journal of Speech Disorders. 1944, 9 (3), 275.

Bereiter, Carl and Englemann, Siegfried. Teaching Disadvantaged Children in the Preschool. Englewood Cliffs, N.J.: Prentice-Hall, Inc. 1966.

Betts, E.A. Foundations of Reading Instruction. New York: American Book Co. 1946.

Budoff, Milton and Quinlan, Donald. "Auditory and Visual Learning in Primary Grade Children." Child Development, 35: June, 1964 583-586.

Buktenica, N.A. "Auditory discrimination: a new assessment procedure." Exceptional Children. 1971. 38 (3), 237.

Cattell, P. Measurement of intelligence in infants and young children. New York: Psychological Corporation, 1950.

Chalfant, J.C., and Scheffelin, M.A. "Central processing dysfunction in children, a review of research". MINDS Monograph. 1969. 9, 1-78.

Christine, Dorothy, and Christine, Charles. "The relationship of auditory discrimination articulation defects and reading retardation". Elementary School Journal. 1964, 65, 97-100.

Clark, Ann E., and Richards, Charlotte J. "Auditory Discrimination Among Economically Disadvantaged and Non-disadvantaged Preschool Children". Exceptional Children. 1966, 33, 259-262.

Dallett, K.M. "Intelligibility and short-term memory in the repetition of digit strings". Journal of Speech and Hearing Research. 1964, 7 (4), 362.

Davis, J., and Silverman, S.R. Hearing and Deafness. (3rd ed.) New York: Holt, Rinehart and Winston, 1970.

D'Asaro, M.J. and John, V.P. R-E-P language scale. Experimental Edition, October, 1958.

ED087

De Hirsch, Katrina, Jansky, Jeanette, and Langford, William S. Predicting Reading Failure. New York: Harper and Row, Publishers. 1966.

Dunn, L.M. Educating Exceptional Children. 1973.

Edwards, A. Experimental Design in Psychological Research. (Rev. ed.) New York: Rinehart. 1960.

Ervin, S.M., and Miller, W.R. "Language Development". Child Psychology Education. Ed. by H.W. Stevenson, NSSE Sixty-Second Yearbook. Chicago Press, Chicago. 1963. pp. 108-143.

Farrald, Robert R., & Schamber, Richard G. A Mainstream Approach to Identification, Assessment, and Amelioration of Learning Disabilities. Sioux Falls, S.D.: ADAPT Press, 1973.

Gesell, A.L. and Amatruda, C.S. Developmental Diagnosis. New York: Hoeber, 1956.

Hardy, W.G., et al. Auditory screening of infants. Annals of Otology, Rhinology, and Laryngology, 1962, 71, 759-766.

Harris, Albert J. How to Increase Reading Ability. 4th ed.rev. New York: D. McKay Co. 1962.

Harris, Albert J. How to Increase Reading Ability. 5th ed. New York: D. McKay Co. 1970.

Harrison, M. Lucile. Reading Readiness. Boston: Houghton-Mifflin Co. 1939.

Heilman, Arthur W. Principles and Practices of Teaching Reading. 2nd ed. Columbus Ohio: C.E. Merrill. 1967.

Huggman, L. and McReynolds, L. "Auditory Sequence Learning in Children". Journal of Speech and Hearing Research. 1968, 11 (1). 179.

Johnson, D.J. and Myklebust, H.R. Learning Disabilities; Educational Principles and Practices. (4th ed.) New York: Grune and Stratton. 1968.

Karlin, Robert. Teaching Elementary Reading. New York: Harcourt, Brace, and Jovanovich, Inc. 1971.

Katz, Phyllis A., and Deutsch, M. Visual and Auditory Efficiency and Its Relationship to Reading in Children. Cooperative Research Project. No. 1099. 1963.

Kaufman, H., and Ivanoff, J. Another Approach to Evaluating Speech Sound Discrimination. Exceptional Children. 1969, 35 (9), 746.

00088

Kirk, S.A., McCarthy, J.J., and Kirk, W.D. Examiner's Manual Itpa. (2nd ed.) Urbana: University of Illinois Press. 1969.

Lerner, J.W. Children With Learning Disabilities. Boston Houghton Mifflin. 1971.

Lindquist, E.F. Design and Analysis of Experiments in Psychology. Boston: Houghton Mifflin. 1953.

McGrady, H. and Olson, D. Visual and Auditory Learning Processes in Normal Children and Children With Specific Learning Disabilities. Exceptional Children. 1970, 36 (8), 582.

McKin, Margaret G. Guiding Growth in Reading. New York: Macmillan Co. 1955.

Metraus, R. Auditory Memory Span for Speech Sounds of Speech Defective Children Compared with Normal Children. Journal of Speech Disorders. 1942, 7 (1), 36.

Miller, J; Schivunitz, L.; Goetzingle, C. How Infants Three, Four and Five Months of Age Respond to Sound. Exceptional Children. December, 1963.

Morphett, Mabel Vogel and Washburne, Carleton. "When Should Children Begin to Read?" 1931.

Myers, P.I., and Hammill, D.D. Methods for Learning Disorders. New York: John Wiley. 1969.

Myklebust, H.R. Auditory Disorders in Children. (8th ed.) New York: Grune and Stratton. 1967.

Palmer, Charles E. and Kidd, John W. Speech and Hearing Problems (Illinois: Charles C. Thomas, 1951, pp. 114-119.

Pollock, Margaret B., and Pollock, Kenneth C. "Letter to the Teacher of a Hard-of-Hearing Child." Childhood Education, 47: January, 1971, 206-209.

Rampp, Donald L. "The Behavioral Characteristics of Children Exhibiting Auditory Processing Disturbances". Auditory Processing and Learning Disabilities. Memphis: Proceedings of the First Annual Memphis State University Symposium, 1973.

Ranney, J.B., and Moore, M.V. "An Auditory Langu[illegible] Quantren". Journal of Learning Disabilities. 1968, 1 ([illegible], 307.

Reynolds, Maynard C. A Study of the Relationships Between Auditory Characteristics and Specific Silent Reading Abilities. Journal of Educational Research. 1953, 46, 430-449.

00089

Robbins, S. "Importance of Sensory Training in Speech Therapy". Journal of Speech Disorders. 1942, 7 (2), 188.

Rosner, J., and Simon, D.P. "The Auditory Analysis Test: An Initial Report". Journal of Learning Disabilities, 1971, 4 (7), 41.

Rosenberg, P.E. Sensori-neural hearing loss. Maico Audiological Library, Vol. 1. Minneapolis, Minn.: Maico Electronics, 1964.

Sabatino, D.A. "The Construction and Assessment of an Experimental Test of Auditory Perception". Exceptional Children. 1969, 35 (9), 730.

Siegenthaler, Bruce M., and Barr, Carolie A. "Auditory Figure-Background Perception in Normal Children." Child Development, 38: December, 1967. 1163-1167.

Smith, Nila Banton. Reading Instruction for Today's Children. Englewood Cliffs, N.J.; Prentice-Hall, Inc. 1963.

Stauffer, Russell G. Directing Reading Maturity as a Cognitive Process. New York: Harper and Row, Publishers. 1969.

Van Riper, C. "Children Who Are Slow in Learning Speech". Speech Problems of Children. Ed. Wendell Johnson. New York: Grune and Stratton. 1950.

Van Riper, C., and Irwin, J. Voice and Articulation. Englewood Cliffs, New Jersey: Prentice-Hall. 1958.

Vellutino, F.; Desetto,L.; and Steger, J. "Categorical Judgement and the Wepman Test of Auditory Discrimination". Journal of Speech and Hearing Disorders. 1972, 37 (2), 252.

The Volta Review. Vol. 67, No. 6., June, 1964. 417-419.

Weiner, P. "The Perceptual Level Functioning of Dysphasic Children; A Follow-Up Study". Journal of Speech and Hearing Research. 1972, 15 (2), 424.

Wepman, J. "Relationships of Auditory Discrimination to Speech and Reading Difficulties". ASHA. 1959, 1 (11), 96.

Wepman, J.M. "Auditory Discrimination, Speech and Reading". Elementary School Journal. 1960, 325-333.

Zigmond, Naomi K., & Cicci, Regina. Auditory Learning. San Rafael, California: Dimensions Publishing Co., 1968.

00030